The 2003 FIRST Robotics Competition

TEAM UPDATE #1

Date: January 7, 2003

PLEASE DISTRIBUTE THIS TO OTHER TEAM MEMBERS!

FIRST will provide rules updates and other important information to teams via the FIRST web site at:

http://www.usfirst.org/robotics/2003/docs.htm

Please check the team updates portion of the web site on a regular basis to insure that your team does not miss critical information about the 2003 FIRST Robotics Competition. FIRST recommends assigning at least one team member the duty of keeping up to date on all team updates. This person or group should be responsible for distributing information contained in team updates to the appropriate team members.

QUESTIONS?

In order to post questions on our message board at:

http://jive.ilearning.com/index/jsp

- **You must reference the particular section of the manual you are questioning or your question will not be answered. This will help us give you the most accurate answer possible.**
- **Limit each message board submittal to ask only 1 question at a time. This will allow us to categorize your question and will enhance our ability to respond in a timely manner.**
- **Please do not reply to posted messages. FIRST is the only official source for answers. Replies other than from FIRST will be deleted.**

The message board was deluged with questions over the weekend. We are working to clear up the backlog as quickly as possible.

THE GAME

PAGE 5, SECTION 7.6, 1ST PARAGRAPH

Replace section 7.6, 1st paragraph, with the following:

All containers within the alliance's scoring zone will be worth one point each EXCEPT the containers in the tallest stack. The total number of one-point containers will determine the base score for the alliance. The tallest stack of containers within the scoring zone is the "multiplier stack." Containers in the multiplier stack are worth zero points each (note that containers in other stacks of the same height are worth one point each). The total base score is then multiplied by the height in whole Stack Height Units (SHU) of the multiplier stack. A whole Stack Height Unit is **14-3/4 inches**, which is the height of an individual container nested in a stack. More than one stack of the same height does not affect the multiplier. Whole Stack Height Units will be measured with an Official Stack Height Measuring device. The Official Stack Height Measuring Device will be marked in increments of **14-3/4 inches**

(one wSHU). The details of this device will be released at a later date.

PAGE 10, RULE SC8

Replace SC8 with the following:

When determining the base score for the alliance, the referees will evaluate the containers with the following criteria:

- The total number of containers "in" a Scoring Zone will be counted and assigned one point each. A container will be determined to be "in" a scoring zone if at least some part of the container is touching the colored carpet that defines a scoring zone or is supported exclusively by:
  - Other containers "in" that zone (note: this means that if one container rests entirely in the gray "no score zone" and another container is stacked on top of it that overhangs the scoring zone, neither container will be considered to be "in" the scoring zone);
  - An opponent's robot "in" the scoring zone.
- The height of the tallest stack located in the scoring zone (the "multiplier stack"), measured in whole Stack Height Units (as defined in SC9) is subtracted from the total number of containers to establish the "base score." Containers in additional stacks of the same height will be scored normally;
- If ANY part of your own alliance's robots are in contact with ANY container in a stack (alone or in a multi-container stack), ALL containers in that stack will be worth zero points;
- Opponent robots in contact with containers in the alliance scoring zone will not affect the determination of the base score;
- A container may touch the field border.

PAGE 10, RULE SC9

Replace SC9 with the following:

When identifying the multiplier stack, the referees will base their evaluation on the following criteria:

- Only stacks located "in" a scoring zone (as defined in SC8) are eligible to become multiplier stacks;
- The tallest stack in the alliance scoring zone will be determined to be the multiplier stack. Its height is measured in whole Stack Height Units (SHU) as described previously in Section 7.6. **Fractional stack heights are rounded down to the nearest SHU**;
- If ANY part of an alliance robot is in contact with ANY container in a stack, that stack will not be eligible to be the multiplier stack. In this event, the next-tallest stack will become the multiplier stack;
- There will only be one multiplier stack. If there are multiple stacks of the same height, the redundant stacks will be scored normally as part of the alliance base score;
- Opponent robot contact with a stack will not affect multiplier stack eligibility.

PAGE 12, RULE SC15
Modify the 1st bullet to read as follows:
All teams start each elimination round…

THE ROBOT

PBASIC 2.5 UPDATE

The version PBASIC 2.5 editor will not be released by Parallax until Friday, January 10th. On Friday, it will be released in beta form to FIRST teams only and will be available exclusively on the Innovation First, Inc. website (www.innovationfirst.com). Due to this delay, we have released a second version of the default code that does not require the new editor.

DEFAULT CODE UPDATE
There are two versions of default code loaded in the 2003 Robot Controller. The default code (DEF) is for 2-Stick driver control. The default code (USER) is for 1-Stick driver control.

The default code shipped in your Robot Controller (both USER and DEF) does not contain the code that stops PWM devices with limit switches. We recommend you re-load the default code (located at www.innovationfirst.com) if this feature is needed.

The default code shipped also contains test code. This is activated with sw2 of the channel switch. If you intend to use a channel dongle to access alternate channels, we recommend you re-load the default code (located at www.innovationfirst.com). Refer to the competition port pinout guide on the documentation page for information on accessing alternate channels.

PAGE 12, SECTION 3.2.4
Delete Victor 883.

PAGE 21, RULE C13
Modified to now read:
No more than one drill motor, CIM motor, fisher-price motor, globe motor or van door motor may be powered by each speed controller. The pneumatic pump may be powered by a speed controller using a 20a or 30a breaker.

PAGE 24, CHART
Delete Victor 883.

PAGE 29, KIT OF PARTS LIST, SERVO
Innovation First is not the supplier of the servo. They acquired the servo for FIRST through a distributor.

PAGE 43, RESTRICTED PARTS LIST
Delete Victor 883.

PAGE 46, BULLETED LIST

- PWM/Relay Cable: This is Innovation First style, not Hitec style and is available in 12", 24", and 36" lengths.
- PWM/Relay Y Cable: This is Innovation First style, not Hitec style.
- Delete Victor 883.

KIT OF PARTS

CLARIFICATION

You can only use the motors provided in the 2003 Kit of Parts in the quantities provided on your robot. You can purchase additional motors to have on hand as spares.

SHIPPING OF KITS

FIRST unexpectedly ran out of several pneumatic parts before all of the kit packing was completed. We have received additional parts and the remaining kits should be shipped Wednesday or Thursday, 1/8 or 1/9. We apologize for the delay.

MISSING OR BROKEN

For any missing parts or broken parts, please contact us at:

frcparts@usfirst.org

Remember to include your team number and contact information with phone number and/or e-mail address.

NOT PROVIDED THIS YEAR

The 25-pin solder cup connector and the plastic shield for the 25-pin solder cup connector was not in your kit and will not be provided for 2003.

40AMP CIRCUIT BREAKERS

Due to a supplier delivery problem, there were no 40A MAXI-style auto-resetting circuit breakers provided in your kits. FIRST expects to ship these missing components to teams in the near future. In the interim, we suggest that teams temporarily connect their VICTOR Speed Controllers that operate the Drill and CIM motors to any unused positions in the two ATC style breaker panels provided and use the extra 30A Snap Action circuit breakers that were put in the kits to protect those specific loads.

In no case should teams use locally obtainable automotive after-market MAXI-style fuses or MAXI-style circuit breakers in these circuits because the surge current characteristics of the automotive components are not compatible with the VICTOR controllers.

LATE SHIPMENT

The following items will be shipped to teams at a later date.

1. SMC pneumatic parts:
   - Double Solenoid Base Ported Valve
   - Flow Control
   - Fitting, Straight ¼" Tube
   - Fitting, 90 Elbow ¼" Tube
   - Fitting, Tee Union ¼" Tube
   - Fitting, Male Run T 1/8 NPT ~ ¼" Tube
   - ¼" OD Tubing
2. Metric key stock; fits the shaft on the CIM (Chiaphua/Atwood) motor only; size is 0.079" x 0.094" x 1"; 2 pieces
3. Reflexite retro-reflective tape, 6" sample
4. Various decals/stickers.
5. 40A Snap Action circuit breakers.

MSC DIRECT SHIPMENT

If you haven't received the optical sensors from Banner, the MSC big blue book, and the Microsoft Visual Studio.net software, it will be coming soon. However, due to an error in shipment, only 740 copies of MS Visual Studio.net were provided for the 2003 season. Only the first 740 teams will be receiving this software in the MSC shipment.

YAW RATE SENSOR CONNECTOR

The connector configuration for the yaw rate sensor for the 2003 season is different than the one in 2002 and FIRST was not aware of this change until recently. We are in the process of acquiring information on how to obtain the new connector; however, a connector is listed on the spec sheet provided with each yaw rate sensor.

NUTS AND BOLTS

Your kit should have had one (1) bag of gearbox nuts, nylock ¼-20Z and one (1) bag of motor mount nuts, nylock ¼-20Z. Each bag contained 8 nuts. In fact, during our packing process, you may have gotten two (2) bags of one and none of the other. They are the same part so they are interchangeable.

SUPPLIER LIST

The supplier list will be published this week. This list will show you what suppliers will sell directly to teams.

BUYING PARTS MADE FOR FIRST

Instructions on how to obtain the parts that were made specially for FIRST will be published this week. Arrangements with an order fulfillment company are nearly complete.

UPDATED 2003 KIT OF PARTS LIST

Below is an updated copy of the 2003 Kit of Parts Check List. Please disregard any other version.

2003 Kit by CONTAINER by Sub-Assembly
for Manual

Date: 1/7/2003
Time:3:48:15 Pm

Container Weight: 64.67

Blue

Aluminum Hex 3"

Part Name/Description	Part Number	Dimensions	Kit	Supplier
Coupling, Aluminum, Solid, 1" Hex OD, 3" Long		Commercially available; aluminum; part of a 3-piece assembly for 8mm Chiaphua shaft	2	Northstar Steel and Aluminum, Inc

Bearing Bag

Part Name/Description	Part Number	Dimensions	Kit	Supplier
Pillow Block		Manufactured for FIRST, aluminum, accepts bearing for 5/8" shaft	4	ComTech
Flange, Two Bolt Self-Aligning, 40MST	40MST	Fits 1/2” Bearing	8	The Torrington Company
Radial Ball Bearing, S7KDD, with Shields	S7KDD	5/8” I.D. - 1.375 OD - .344 Width	12	The Torrington Company
Radial Ball Bearing With Spherical O.D., RA008RR	RA008RRB + COLLAR	1/2” I.D., Self Locking Collar	4	The Torrington Company

Control System Box

Part Name/Description	Part Number	Dimensions	Kit	Supplier
Radio Modem for Robot Controller		RS-422, 9 pin F, rubber antenna	1	Innovation First, Inc
Relay Module (Spike)		12V, 20A Max	4	Innovation First, Inc
Robot Controller			1	Innovation First, Inc
Speed Controller (Victor 884)	Victor 884		4	Innovation First, Inc

Loose

Part Name/Description	Part Number	Dimensions	Kit	Supplier
Quick-Disconnect Power Connector (with 1' leads)	6331G1	#6 AWG Red/Black Wire, pair	2	Anderson Power Products

2003 Kit by CONTAINER by Sub-Assembly
for Manual

Date: 1/7/2003
Time:3:48:15 Pm

☐	1 Conductor Wire	C2107-41-03	35', #10 AWG, Red	1	BICC General
☐	1 Conductor Wire	C2107-01	35', #10 AWG, Black	1	BICC General
☐	2 Conductor Jacketed Wire	C2405-41-10	35', #16 AWG	1	BICC General
☐	2 Conductor Jacketed Wire	C2461-21-10	30', #24 AWG	1	BICC General
☐	3 Conductor Shielded Wire	C0741-21-10	30', #24 AWG	1	BICC General
☐	1 Conductor Wire	#6 AWG Black	10', #6 AWG, Black	1	Delphi Connection Systems
☐	1 Conductor Wire	#6 AWG Red	10', #6 AWG, Red	1	Delphi Connection Systems
☐	Muffin Fan (Large)	4212/2-534	12 Vdc	1	EBM Industries
☐	Muffin Fan (Tiny)	412	12 Vdc	5	EBM Industries
☐	Battery	EX18-12	12 volt, 18 AH Deep Cycle Non-Spillable	2	Exide Technologies
☐	(GB), Bolt, 307AHB 1/4-20 x 6.5Z, Hex Head	11026	For gear box	1	Fastenal
☐	(GB), Nut, NYLOCK NE 1/4-20Z	37018	For gear box bolts	1	Fastenal
☐	(GB), Washer, Flat, 1/4" Hole, USS F/W 1/4Z	33004	Washer for gearbox fastening bolts	1	Fastenal
☐	(MM), Bolt, Motor Mount, 1/4-20 x 1"; 307AHB 1/4-20 x 1Z	11005	Bolt	1	Fastenal

2003 Kit by CONTAINER by Sub-Assembly
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Date: 1/7/2003
Time:3:48:15 Pm

☐	(MM), Bolt, Motor Mount, 1/4-20 x 3-1/4"	13016	Bolt	1	Fastenal
☐	(MM), Bolt, Motor Mount, 10-32 x 2"; SHCS 10-32 x	23172	Bolt	1	Fastenal
☐	(MM), Nut, Motor Mount, 1/4-20; NYLOCK NE 1/4-20Z	37018	Nuts	1	Fastenal
☐	(MM), Nut, Motor Mount, 10-32; NYLOCK NM 10-32Z	37015	Nuts	1	Fastenal
☐	(MM), Washer, Motor Mount, 1/4-20; SAE F/W 1/4	33078	Washers; washer under bolt head and nu	1	Fastenal
☐	(MM), Washer, Motor Mount, 10-32; SAE F/W (#10) Z	33074	Washers; washer under bolt head and nu	1	Fastenal
☐	(TR), Nut, NYLOCK NE 3/8-16Z	37024	3/8" nut for threaded rod	1	Fastenal
☐	(TR), Washer, Flat, 3/8" Hole, USS F/W 3/8Z	33008	Flat washer for 3/8" threaded rod	1	Fastenal
☐	Motor, Globe, with Drive Assembly	409A587	12Vdc	2	Globe Motors
☐	15-Pin Molded Cable	DB15MM	DB15 pin M-M, 6 feet	2	Innovation First, Inc
☐	9-Pin Cable	DB9MF	DB9 Male to Female, 6', Shielded	4	Innovation First, Inc
☐	Ramp Surface Material, Kit Sample, 12" x 18"		Carbon steel wire cloth, 1" mesh, .118 wire diameter	1	McNichols Co.
☐	Battery Charger, Automatic	cxc-2005	6A.	1	Midtronics (Exide spinoff)

2003 Kit by CONTAINER by Sub-Assembly
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Date: 1/7/2003
Time:3:48:15 Pm

Seat/Window Bag

Part Name/Description	Part Number	Dimensions	Kit	Supplier
Coupler to Nippon-Denso Motor Gear		Injection molded	2	DEKA
Flexible Shaft Coupling	None	Black	2	DEKA
Worm Gear Actuator-Left Hand	0113-0185	2 inch linear movement	1	Excellence Manufacturing, Inc.
Worm Gear Actuator-Right Hand	0113-0184	2 inch linear movement	1	Excellence Manufacturing, Inc.
Flexible Motor Shaft	16723160	13.5” Long, Fits Seat Motor	2	Grand Rapids Controls

Container Weight: 0

Direct From External Vendor

Autodesk Direct Ship

Part Name/Description	Part Number	Dimensions	Kit	Supplier
3D Studio Max 5, Autodesk		Includes Character Studio - see separate record	1	Autodesk
Animations from 2002 Season, Autodesk		1 DVD	1	Autodesk
Character Studio, Autodesk		Included with 3D Studio Max 5	1	Autodesk
Inventor Series 6, Autodesk		Includes Mechanical Desktop - see separate record	1	Autodesk
Manufacturing Education Curriculum 2002 for Autodesk 5.3 and Autodesk Streamline, Autodesk		1 CD	1	Autodesk
Mechanical Desktop, Autodesk		Included with Inventor Series 6	1	Autodesk

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for Manual

Date: 1/7/2003
Time:3:48:15 Pm

☐	Training Booklet and CD, Inventor Series 6, Autode		1 CD	1	Autodesk

Container Weight: 56.236

Red

Catalog Bag

	Part Name/Description	Part Number	Dimensions	Kit	Supplier
☐	Anderson Power Products Catalog		Catalog	1	Anderson Power Products
☐	Video, Compilation of Past Competitions		Video	1	FIRST
☐	McNichols, Catalog, Stickers, Rulers		Catalog and trinkets	1	McNichols Company
☐	Magazine, Nut and Volts			1	Nuts and Volts

Drill Bag

	Part Name/Description	Part Number	Dimensions	Kit	Supplier
☐	Screw, Left-Hand for Bosch 1/2" Drill Drive Assembly			2	ADM Tool
☐	Mount for 1/2" Drill Motor; 4 Pieces		Injection molded	2	NYPRO, Inc
☐	Drill Drive Assembly (Transmission), 1/2"	2606200917	2 Speed -12.07:1 & 42.62:1 Gear Ratios	2	S-B Power Tool
☐	Motor Assembly, 1/2"	2607022890	0.87Nm @ 127A stall, 19670RPM No-Load	2	S-B power Tool Co.

Drive Train Bag

	Part Name/Description	Part Number	Dimensions	Kit	Supplier
☐	(GB), Gearbox, Clamping Plate for 2" x 4" Frame (can be used on smaller stock)		Injection Molded	2	Nypro

2003 Kit by CONTAINER by Sub-Assembly
for Manual

Date: 1/7/2003
Time:3:48:15 Pm

☐	(GB), Gearbox, Pillow Block Half		Injection Molded	8	Nypro
☐	(GB), Gearbox, Pillow Block Mounting Plate, Used in Pairs		Injection Molded	4	Nypro

Gear Bag

	Part Name/Description	Part Number	Dimensions	Kit	Supplier
☐	Gear, 1" Helical, 5/8" Keyed Bore, Right Hand	H1212R		2	Boston Gear
☐	Gear, 2" Helical, 5/8" Keyed Bore, Right Hand	H1224R		2	Boston Gear
☐	Key Stock, Step, 1/8"+3/16" x 12"		1/8" and 3/16" step key stock; the 1/8" side fits the 1" and 2" gears; the 3/16" side fits the 5/8" shaft; 12" piece	1	ITW Bee Leitzke

Loose

	Part Name/Description	Part Number	Dimensions	Kit	Supplier
☐	Yaw Rate Sensor	98120313903		1	BEI Systron Donner Inertial Division
☐	Motor, Van Door, Bosch	6004FA0009	12 Vdc, 75 RPM	1	Bosch Automotive
☐	Motor, CIM (aka Chiaphua or Atwood), 8mm keyed output shaft		8mm keyed output shaft	2	CCL Industrial Motor, LTD
☐	LED, Panel Mount	5102H5-12V	Green, 12V	2	Chicago Miniature Lamp, Inc
☐	Maxi Block, 4 Terminated Leads, 1 of 5 pieces	12077734	Maxi-style circuit breakers only; top, insert, fuse block, bolt, 4 terminated leads	1	Delphi Connection Systems
☐	Maxi Block, Fuse Block, 8 Position; 1 of 5 pieces	12077532	Maxi-style circuit breakers only; top, insert, fuse block, bolt, 4 terminated leads	1	Delphi Connection Systems
☐	Maxi Block, Insert, 8 Position, 1 of 5 pieces	12092231	Maxi-style circuit breakers only; top, insert, fuse block, bolt, 4 terminated leads	1	Delphi Connection Systems

2003 Kit by CONTAINER by Sub-Assembly
for Manual

Date: 1/7/2003
Time:3:48:15 Pm

☐	Maxi Block, Top, 1 of 5 pieces	12077734	Maxi-style circuit breakers only; top, insert, fuse block, bolt, 4 terminated leads	1	Delphi Connection Systems
☐	Nippon-Denso Motor, Window, Right			2	Denso International America, Inc.
☐	(GB),Washer, Belleville (Disc Spring)	MB1250-040	1.250 x 0.630 x 0.0400; for preloading in the gear box; Gardiner Spring 800-331-3263; come in pkg of 12	5	Fastenal
☐	Maxi Block, Bolt, 20mm Flanged, With Yellow Zinc Plating, 1 of 5 pieces	MG x 1	Maxi-style circuit breakers only; top, insert, fuse block, bolt, 4 terminated leads; 20mm flanged, with yellow zinc plating	1	Fastenal
☐	Retaining Rings for 5/8" Keyed Shaft			1	Fastenal
☐	FedEx Airbills			3	FedEx
☐	FedEx Envelope - Introduction Letter			1	FedEx
☐	FedEx Pouch			3	FedEx
☐	Fisher-Price 10 Web Jeep Driver	74460-2249D	Black	2	Fisher-Price, Inc.
☐	Motor/Gearbox, Fisher-Price	174370-5995	12 Vdc stall torque (mNm) 532.19+/- 10% 21T #7 Gearbox	2	Fisher-Price, Inc.
☐	Breaker, Buss, Ckt Breaker / Disconnect Switch	185-120-F01-1	120A., automotive style	1	Innovation First, Inc
☐	Breaker Panel	15600-12-21	ATC, 100A. max	2	Innovation First, Inc
☐	PWM/Relay Cable	PWM-EXT	Hitec/JR-style, 36” Long	8	Innovation First, Inc
☐	PWM/Relay Y Cable	PWM-Y	Hitec/JR-style, 24” Long	2	Innovation First, Inc

2003 Kit by CONTAINER by Sub-Assembly
for Manual

Date: 1/7/2003
Time:3:48:15 Pm

☐	Servo	HS-322S	42 oz./in. peak torque, 0.19 sec./60°	2	Innovation First, Inc
☐	Snap-Action Circuit Breaker	VB3-A30-F57	30 amp,12 volt, Auto-Resetting	7	Innovation First, Inc
☐	Snap-Action Circuit Breaker	VB3-A20-F57	20 amp,12 volt, Auto-Resetting	5	Innovation First, Inc
☐	Revolving Light, Taiwan	CG-30	with red and blue lenses	1	Juluen Enterprise Co., Ltd (Taiwan)
☐	Lead Screw w/ Nut	P7000658	12” Long	1	Kerk Motion Products, Inc.
☐	Microsoft, Front Page			1	Microsoft
☐	Microsoft, Project			1	Microsoft
☐	High-Density Polyethylene (HDPE)		Smooth; 6" x 6" x 1/4" kit sample; this is thinner than the platform material but is to demonstrate the surface	1	Plastic Supply
☐	Wheel, 9", Skyway		5/8" keyed hub	2	Skyway Recreation Products
☐	Wheel, Wheelchair, 6"	WHL70C	6” Ø, 5/16” I.D. Bearings, 1-1/2” Wide Flange	2	Skyway Recreation Products
☐	15-Pin Solder Cup Connector	747909-2	DB15 Female	2	TYCO Electronics Foundatio

Pneu - Bracket/Clevis

	Part Name/Description	Part Number	Dimensions	Kit	Supplier
☐	Pneumatics Kit, Pivot Bracket Set, Cylinder, Parker	LO7131 0300		1	Various
☐	Pneumatics Kit, Rod Clevis, Cylinder, Parker	LO7130 0400		1	Various

2003 Kit by CONTAINER by Sub-Assembly
for Manual

Date: 1/7/2003
Time:3:48:15 Pm

Pneu - Compressor/Relief

Part Name/Description	Part Number	Dimensions	Kit	Supplier
Pneumatics Kit, Compressor, Thomas	405ADC38-12		1	Various
Pneumatics Kit, Relief Valve, 120psi, Norgren	16-004-015	120psi	1	Various

Pneu - Festo Valve Kit

Part Name/Description	Part Number	Dimensions	Kit	Supplier
Pneumatics Kit, Valve Kit, Solenoid, With Fittings, Festo	MFH-5-1/8		1	Various

Pneu - Monnier 2ndary Reg

Part Name/Description	Part Number	Dimensions	Kit	Supplier
Pneumatics Kit, Secondary Pneumatic Regulator, Monnier	101-3002-1		1	Various

Pneu - Monnier Reg Bracket +

Part Name/Description	Part Number	Dimensions	Kit	Supplier
Pneumatics Kit, Regulator Mounting Bracket and Nut Monnier	3536		1	Various

Pneu - Nason Switch

Part Name/Description	Part Number	Dimensions	Kit	Supplier
Pneumatics Kit, Pressure Switch Opens @ 115psi; Closes @ 95psi, Nason	SM-2B-115R		1	Various

Pneu - Norgren Gauge

Part Name/Description	Part Number	Dimensions	Kit	Supplier
Pneumatics Kit, 0-160psi Gauge for Norgren Regulator, Norgren	18-013-212		2	Various

Pneu - Norgren Reg Bracket+Nu

Part Name/Description	Part Number	Dimensions	Kit	Supplier
Pneumatics Kit, Regulator Mounting Bracket and Nut Norgren	18-025-003		1	Various

2003 Kit by CONTAINER by Sub-Assembly
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Date: 1/7/2003
Time:3:48:15 Pm

Pneu - Norgren Regulator

Part Name/Description	Part Number	Dimensions	Kit	Supplier
Pneumatics Kit, Main Regulator with 60psi Max Output, Norgren	R07-153-RNEA		1	Various

Pneu - Parker Brass Bag

Part Name/Description	Part Number	Dimensions	Kit	Supplier
Pneumatics Kit, Adaptor 1/4" Female to 1/8" Male, Parker	222P-4-2		6	Various
Pneumatics Kit, Bushing 1/8" Female to 1/4" Male, Parker	209P-4-2		12	Various
Pneumatics Kit, Hex Nipple 1/8" NPT, Parker	216P-2		6	Various
Pneumatics Kit, Manual 2-Way Plug Valve, Parker	PV609-2		1	Various
Pneumatics Kit, Plug 1/4", Parker	218-4		6	Various
Pneumatics Kit, Plug 1/8", Parker	218-2		6	Various
Pneumatics Kit, Union Tee, Parker	2203P-2		4	Various

Pneu - Parker Cylinder

Part Name/Description	Part Number	Dimensions	Kit	Supplier
Pneumatics Kit, Cylinder, Parker	1.50DPSR8.00	1.5" bore x 8" stroke; rear pivot mount	1	Various

Pneu - Teflon/Vibration Feet

Part Name/Description	Part Number	Dimensions	Kit	Supplier
Pneumatics Kit, Teflon Tape, 1/4" x 100'			1	Various
Pneumatics Kit, Vibration Isolators for Compressor, Lord Corp	SMB003-0100-2		1	Various

2003 Kit by CONTAINER by Sub-Assembly
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Date: 1/7/2003
Time:3:48:15 Pm

Pneu - Volume Tank

Part Name/Description	Part Number	Dimensions	Kit	Supplier
Pneumatics Kit, Volume Tank, Clippard	AVT-32-16	16 cu. in., 2" x 8"	2	Various

Pneu - Wika Gauge

Part Name/Description	Part Number	Dimensions	Kit	Supplier
Pneumatics Kit, 0-160psi Gauge for Norgren Regulator, Wika			1	Various

Spring Bag

Part Name/Description	Part Number	Dimensions	Kit	Supplier
Spring, Compression	C03000471500MYD	Yellow	6	Associated Spring Raymond
Spring, Compression	C03600510620MZP	Silver	6	Associated Spring Raymond
Spring, Compression	C0300-054-3000	Blue	1	Associated Spring Raymond
Spring, Compression	C0180-014-0880-mzp	Small SIlver	8	Associated Spring Raymond
Spring, Compression	C0240-022-0500-MZP	Small Brass	4	Associated Spring Raymond
Spring, Compression	C0300-0451000-mzp	Med. Brass	7	Associated Spring Raymond
Spring, Compression	C0240-042-2250-s	Med. silver	6	Associated Spring Raymond
Spring, Extension	E01800261000MB0	Black	3	Associated Spring Raymond
Spring, Extension	E0180-022-0750-MZP	Small SIlver	6	Associated Spring Raymond

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Date: 1/7/2003
Time:3:48:15 Pm

Wire Wrap/Velcro Fastener Bag

Part Name/Description	Part Number	Dimensions	Kit	Supplier
Helical Plastic Wire Wrap	2NFP9C	1/4" Ø x 24"	1	Hellermann Tyton
Helical Plastic Wire Wrap	3NFP0C	1/2" Ø x 24"	1	Hellermann Tyton
Velcro grip tie (2 in a pack)	SPLTHGRIP sample pack	6"x 1"	1	Hellermann Tyton
Velcro Grip Ties	GT.50X80C2	8" x 1.75"	2	Hellermann Tyton
Latex Tubing	5234k44	1/4" I.D., 3/8" O.D., 5'	2	Kent Elastomer
Velcro 18" One Wrap grip tie	170778	1"x18" grip tie White	2	Velcro USA, Inc.

Woodie Coupling/Key Bag

Part Name/Description	Part Number	Dimensions	Kit	Supplier
Coupling, 1/2" Drill Motor, Aluminum, accepts 1/2" Drill Shaft, 1" Hex OD		Fabricated for FIRST; aluminum; part of a 3-piece assembly for 1/2" Skil-Bosch	2	ComTech
Coupling, 1/2" Drill Motor, Aluminum, accepts 5/8" Keyed Shaft, 1" Hex OD		Fabricated for FIRST; aluminum; part of a 3-piece assembly for 1/2" Skil-Bosch	2	ComTech
Coupling, Aluminum, accepts 8mm Chiaphua Shaft, 1" Hex OD		Fabricated for FIRST; aluminum; part of a 3-piece assembly for 8mm Chiaphua shaft	2	ComTech
Coupling, Plastic, Round, 1/2" Skil-Bosch, Accepts 1" Hex Both Sides		Fabricated for FIRST; plastic; part of a 3-piece assembly for 1/2" Skil-Bosch	2	DEKA
Coupling, Plastic, Round, Chiaphua, Accepts 1" Hex Both Sides		Fabricated for FIRST; plastic; part of a 3-piece assembly for 8mm Chiaphua shaft	2	DEKA
Key Stock, 3/16" x 12"		3/16" key stock; fits 5/8" shaft but not the 1" or 2" gears	1	ITW Bee Leitzke

2003 Kit by CONTAINER by Sub-Assembly
for Manual

Date: 1/7/2003
Time:3:48:15 Pm

Container Weight: 0

Separate Box

Metal Box

	Part Name/Description	Part Number	Dimensions	Kit	Supplier
☐	(GB) Spacer, Steel		Spacer for 2" x 4" material; 0.277 ID; 0.375 OD; 1.75" long	8	AM Industries
☐	(MM) Spacer, Steel		Spacer for 2" x 4" material; 0.277 ID; 0.375 OD; 1.75" long	4	AM Industries
☐	(TR) Spacer, Steel		Spacer for 2" x 4" material; 0.495 ID; 0.625 OD; 1.75" long	4	AM Industries
☐	Fisher-Price Axle	7/16"Ø x 26"	7/16"Ø x 26"	1	Fisher-Price, Inc.
☐	Shaft, 5/8" Keyed		5/8" keyed x 36"	1	G & G
☐	Frame, 2" x 4" Extruded Aluminum		2" x 4" x 36"	2	Hadco
☐	Pipe, 1" Aluminum		1" x 24" schedule 40	2	Hadco
☐	(TR), Threaded Rod , 3/8"		3/8" Ø x 36", 20 Pitch Coarse Thread	2	Northstar
☐	Shaft, DGP (drawn, ground, polished)	5/16" Ø x 18" DGP	5/16" Ø x 18" TGP	1	Northstar Steel and Aluminum, Inc
☐	Shaft, DGP (drawn, ground, polished)	1/2" Ø x 18" DGP	1/2" Ø x 18" TGP	1	Northstar Steel and Aluminum, Inc.
☐	(GB), Spacer, Pipe, for Gear Box		0.652 ID; 0.75 OD; 0.049 wall x 24"; teams can cut it into lengths of their choice	1	Yarde Metals

Container Weight: 2

Shipped from Curtis 1000

2003 Kit by CONTAINER by Sub-Assembly
for Manual

Date: 1/7/2003
Time:3:48:15 Pm

Curtis 1000 Direct Ship

	Part Name/Description	Part Number	Dimensions	Kit	Supplier
☐	Manual - 2003 FIRST Robotics Competition			1	FIRST

Container Weight: 3.645

Shipped from FIRST

FIRST Direct Ship

	Part Name/Description	Part Number	Dimensions	Kit	Supplier
☐	Key Stock, Metric		Metric key stock; fits the shaft on the Chiaphua motor only; 0.079" x 0.094" x1"	2	CCL Industrial (Chiaphua)
☐	Connector for Yaw Rate Sensor	12064758	3 pin, 24 AWG x 12" cable	1	Delphi Packard Electric Systems
☐	Snap-Action Circuit Breaker		40 amp,12 volt, Auto-Resetting	4	Innovation First, INc
☐	Reflexite, retroreflective, 1” wide x 6" long		This was bought in 2002 and we have enough for 2003	1	Reflexite

Pneu - SMC Kit

	Part Name/Description	Part Number	Dimensions	Kit	Supplier
☐	Pneumatics Kit, Double Solenoid Base Ported Valve SMC	NVJ5243Y-6G-01T		2	Various
☐	Pneumatics Kit, Fitting, 90 Elbow 1/4" Tube, SMC	KQL07-34S		20	Various
☐	Pneumatics Kit, Fitting, Male Run T 1/8 NPT ~ 1/4" Tube, SMC	KQY07-34S		5	Various
☐	Pneumatics Kit, Fitting, Straight 1/4" Tube, SMC	KQH07-34S		20	Various
☐	Pneumatics Kit, Fitting, Tee Union 1/4" Tube, SMC	KQT-07-00-Y		5	Various

2003 Kit by CONTAINER by Sub-Assembly
for Manual

Date: 1/7/2003
Time:3:48:15 Pm

☐	Pneumatics Kit, Flow Control, SMC	NAS2201F-N01-07S		6	Various

Pneu - SMC Tubing

	Part Name/Description	Part Number	Dimensions	Kit	Supplier
☐	Pneumatics Kit, 1/4" OD Tubing, SMC	TIUB07B-20	20 meters	1	Various

Container Weight: 2.25

Shipped from IFI

Innovation First Direct Ship

	Part Name/Description	Part Number	Dimensions	Kit	Supplier
☐	Flightstick Joystick	200-502 flightstick	7" Cable with Male DB15	2	Innovation First, Inc
☐	Operator Interface			1	Innovation First, Inc
☐	Power Supply for Operator Interface		9 Vdc	1	Innovation First, Inc
☐	Radio Modem for Operator Interface		RS-422, 9 pin F, metal antenna	1	Innovation First, Inc

Container Weight: 0.3

Shipped from MSC

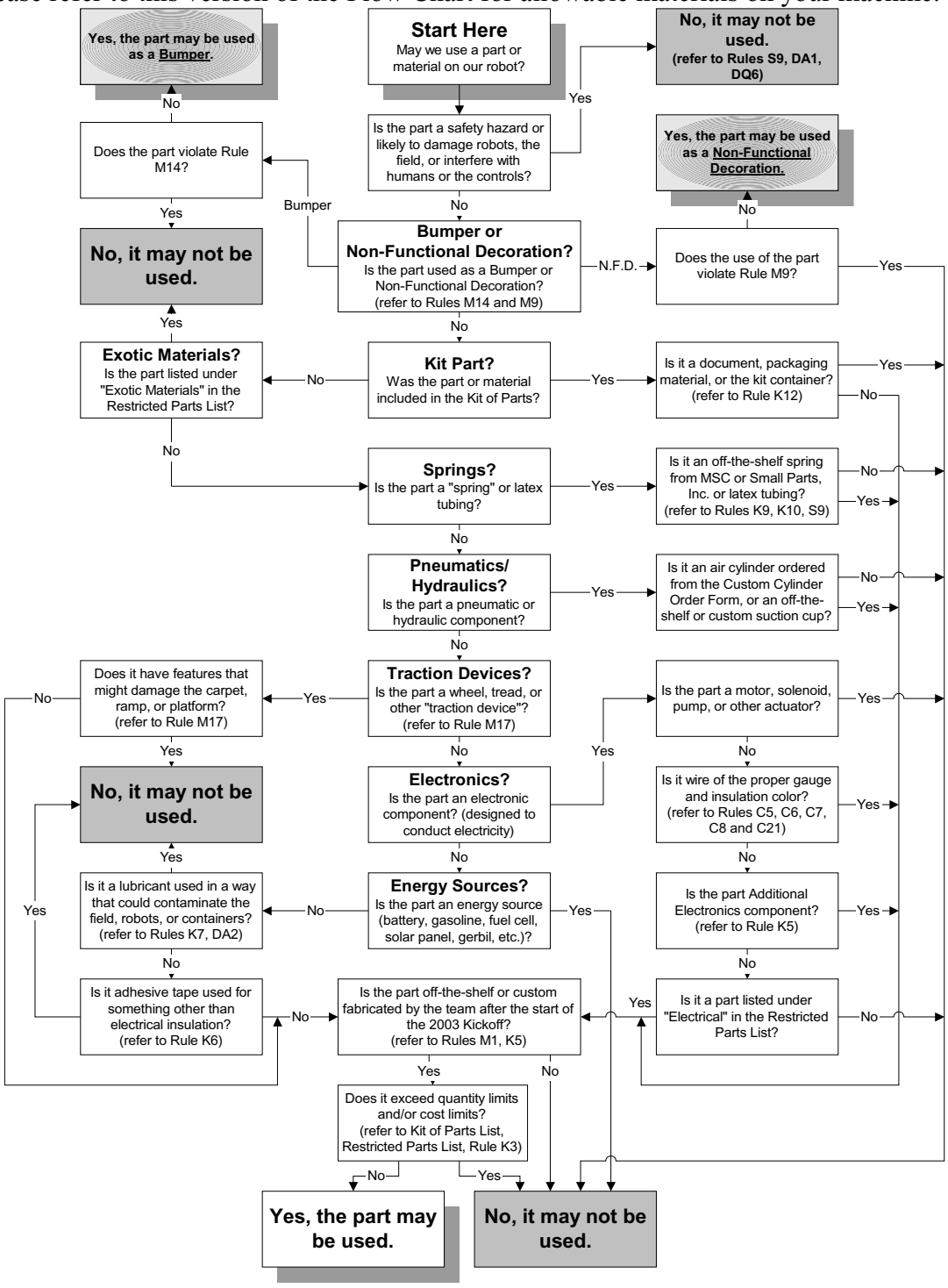
MSC Direct Ship

	Part Name/Description	Part Number	Dimensions	Kit	Supplier
☐	Optical Sensor	Qs18Vn6LV		3	Banner Engineering Corporation
☐	FileMaker Pro			1	FileMaker
☐	Microsoft, Visual Studio Net			1	Microsoft

PART USE FLOWCHART - REVISED

FLOW CHART

Please refer to this version of the Flow Chart for allowable materials on your machine.



FIELD CORRECTIONS

RAMP SURFACE

Please refer to the HDPE sample provided in your kit of parts before ordering. FIRST is using the smooth type.

RAMP STRUCTURES

Blueprints for the wooden version of the Ramps are available on the FIRST web site at:

http://www.usfirst.org/robotics/2003/docs.htm

AUTODESK

Autodesk has, once again this year, generously offered to render all the parts in the kit in Autodesk Inventor and make the "Virtual Kit Of Parts" available to all teams for use on Streamline. FIRST was unable to get all the kit of parts components to Autodesk in time for them to be available immediately after the Kickoff. The final group of parts was shipped to Autodesk on 1/2/03. Autodesk estimates that the Virtual Kit of Parts should be complete and available to teams using their Autodesk Streamline accounts by January 13th.

We apologize for the delay and express our sincere thanks to Autodesk for their continuing support of our programs.

The 2003 FIRST Robotics Competition

TEAM UPDATE #2

Date: January 9, 2003

PLEASE DISTRIBUTE THIS TO OTHER TEAM MEMBERS!

FIRST will provide rules updates and other important information to teams via the FIRST web site at:

http://www.usfirst.org/robotics/2003/docs.htm

Please check the team updates portion of the web site on a regular basis to insure that your team does not miss critical information about the 2003 FIRST Robotics Competition. FIRST recommends assigning at least one team member the duty of keeping up to date on all team updates. This person or group should be responsible for distributing information contained in team updates to the appropriate team members.

QUESTIONS?

MESSAGE BOARD

In order to post questions on our message board at:

http://jive.ilearning.com/index.jsp

This link has been corrected. In Team Update #1, there was a slash (/) before jsp, rather than a period (.).

- **You must reference the particular section of the manual you are questioning or your question will not be answered. This will help us give you the most accurate answer possible.**
- **Limit each message board submittal to ask only 1 question at a time. This will allow us to categorize your question and will enhance our ability to respond in a timely manner.**
- **Please state your inquiry as a question. Some submittals have been lengthy and we have had a great deal of trouble trying to find the question buried within.**
- **Do not reply to posted messages. FIRST is the only official source for answers. Your replies to posted questions slow down the moderating of this forum. Replies other than from FIRST will be deleted.**

AUTODESK, INC.

All inquiries, please refer to:

www.first.enteries.autodesk.com

THE GAME

No information today but there will be in the next update.

THE ROBOT

PAGE 25, RULE K3 and K5
Any additional parts purchased from IFI do count towards the $3,500 limit on the total cost of additional components.

PAGE 47, SAMPLE INSPECTION SHEET
This sheet is exactly as labeled, a SAMPLE. The final 2003 sheet will be made available in the next few weeks. Items appearing on the SAMPLE sheet may or may not be on the final inspection document.

KIT OF PARTS

MISSING OR BROKEN
For any missing parts or broken parts, please contact us at:

frcparts@usfirst.org

MSC – Tax-Exempt Status
For all teams that wish to use their tax-exempt status for FIRST Robotics purchases from MSC: All tax-exempt certificates must be faxed to the MSC tax department at 516-812-1705. Please reference your team number and corresponding ship-to address. Any purchases made without this certificate on file will be subject to state taxes. Please direct any sales tax questions to Rialate Wickers at 516-812-1559.

CLARIFICATION – More Information
You can only use the motors provided in the 2003 Kit of Parts, in the quantities provided, on your robot. You can purchase additional motors to have on hand as spares.

You can use motors from previous years IF AND ONLY IF they are exactly the same as this year's motors. For example:

- You can use last year's CIM (Chiaphua or Atwood) motor even though the output shaft is different this year;
- You can use last year's Globe motor;
- You cannot use last year's Fisher-Price motor / gearbox;
- You cannot use last year's 3/8" drill motor / gearbox as we have provided a ½" motor / gearbox this year;
- You cannot use last year's window motors as they are NOT the same as this year's window motors;
- You cannot use last year's Mabuchi or Johnson motors as we did not provide them this year;
- You cannot use last year's Keyang motor, as we did not provide them this year;

SHIPPING OF KITS – More Information

All kits have been shipped as of 1/8/2003.

LATE SHIPMENT – More Information

The following items will be shipped to teams sometime during the week of 1/13/2003. **The 40A breakers are not yet available. If FIRST does not have them soon, the remaining items below will be shipped.**

1. SMC pneumatic parts:
   - Double Solenoid Base Ported Valve
   - Flow Control
   - Fitting, Straight ¼" Tube
   - Fitting, 90 Elbow ¼" Tube
   - Fitting, Tee Union ¼" Tube
   - Fitting, Male Run T 1/8 NPT ~ ¼" Tube
   - ¼" OD Tubing
2. Metric key stock; fits the shaft on the CIM (Chiaphua/Atwood) motor only; size is 0.079" x 0.094" x 1"; 2 pieces
3. Reflexite retro-reflective tape, ~~6" sample~~ **8" sample**
4. Various decals/stickers.
5. 40A Snap Action circuit breakers.

YAW RATE SENSOR CONNECTOR – Correction / More Information

The connector configuration for the yaw rate sensor for the 2003 season is different than the one in 2002 and FIRST was not aware of this change until recently. We are in the process of acquiring information on how to obtain the new connector; however, a connector is listed on the spec sheet provided with each yaw rate sensor. WE WERE JUST INFORMED THAT THE CONNECTOR ON THE SPEC SHEET HAS BEEN DISCONTINUED.

SUPPLIER LIST

The supplier list will be published in Team Update #3 on Friday, 1/10/2003. This list will show you what suppliers will sell directly to teams.

BUYING PARTS MADE FOR FIRST

Instructions on how to obtain the parts that were made especially for FIRST will be published in Team Update #3 on Friday, 1/10/2003.

MAXI FUSE BLOCK

The maxi fuse block consists of 4 parts as listed in the 2003 Kit of Parts. These were shipped to teams assembled as one unit, not as 4 separate parts.

FIELD / CORRECTIONS

FIELD LINES

The white field lines that start in the robot starting areas and run to the ramp do NOT continue up the ramp. The lines terminate coincident with an aluminum ramp support. The aluminum ramp support is very reflective and will allow line tracking. Immediately adjacent ramp supports will be painted black.

AUTODESK

See QUESTIONS? at the beginning for Autodesk contact information

The 2003 FIRST Robotics Competition

TEAM UPDATE #3

Date: **January 10, 2003**

PLEASE DISTRIBUTE THIS TO OTHER TEAM MEMBERS!

FIRST will provide rules updates and other important information to teams via the FIRST web site at:

http://www.usfirst.org/robotics/2003/docs.htm

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QUESTIONS?

MESSAGE BOARD

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http://jive.ilearning.com/index.jsp

- **You must reference the particular section of the manual you are questioning or your question will not be answered. This will help us give you the most accurate answer possible.**
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- **Please state your inquiry as a question. Some submittals have been lengthy and we have had a great deal of trouble trying to find the question buried within.**
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AUTODESK, INC.

All inquiries, please refer to:

www.first.enteries.autodesk.com

THE GAME

We have had many questions regarding the use of tethers, mini-robots, mice, mini-me's, etc. Last year, tether rules were inconsistent and a nightmare. Here's what we will allow for the 2003 competition:

It is impossible to define entanglement or predict what might potentially cause entanglement so we are not going to even try. Last year, for those of you that participated, there were

tethers of all shapes, sizes, materials, and capabilities and, much to everyone's amazement, there were very few entanglements… but tethers, in general, were a nightmare.

For 2003, we will allow tethers; however, no electrical wires may be used as tethers, i.e., electrical wires would have to be completely protected in a rigid enclosure. Tape, helical wire wrap, etc., does not qualify as adequate protection. **BY USING A TETHER, YOU OPEN YOUR TEAM UP TO INCREASED RISK OF SAFETY VIOLATIONS AT INSPECTION AND ENTANGLEMENT DURING PLAY, EITHER OF WHICH COULD RESULT IN DISQUALIFICATION.** While the referees are well versed on the rules, individual referees may view and interpret game play differently. Entanglement to one referee may not be entanglement to another. If you use a tether, be prepared for your successes associated with its deployment and of the potential negative consequences of its use.

PAGE 10, RULE SC8

This rule continues to be somewhat confusing as the many forum questions indicate. Before the rule is clarified, some comments:

- In a zone full of containers that have been pushed, thrown, hit, upended, etc., finding a nice, neat, countable pile of containers may be nearly impossible.
- The idea of a "stack" has been diluted; we now are looking for the tallest legal place/location/point in a scoring zone.

Replace Rule SC8 with the following, which has additional clarification imbedded throughout:

When determining the base score for the alliance, the referees will evaluate the containers with the following criteria:

- The height of the tallest stack (tallest place/location/point) located in the scoring zone (the "multiplier stack") is measured in whole Stack Height Units (as defined in SC9);
- The total number of containers "in" a Scoring Zone will be counted and assigned one point each. A container or robot will be determined to be "in" a scoring zone if at least some part of the container or robot is touching the colored carpet that defines a scoring zone or is supported exclusively by:
  - Other containers "in" that zone (note: this means that if one container rests entirely in the gray "no score zone" and another container is stacked on top of it that overhangs the scoring zone, neither container will be considered to be "in" the scoring zone; ***the converse is true that if one container is touching a Scoring Zone and another container is stacked on top of it and overhangs the "no score zone", both containers will be considered to be "in" the Scoring Zone***);
  - An opponent's robot "in" the scoring zone. ***This means that an opponent's robot holding a container in the air would count. This bullet is worth reading several times as there are some subtle and very interesting results and consequences.***
- The height of the tallest stack located in the scoring zone (the "multiplier stack"), measured in whole Stack Height Units (as defined in SC9) is subtracted from the total number of containers to establish the "base score." Containers in additional stacks of the same height will be scored normally;
- If ANY parts of your own alliance's robots are in contact with ANY container ***in your own Scoring Zone*** in a stack (alone or in a multi-container stack), ALL containers in that stack will be worth zero points. ***This bullet is worth reading several times. Any***

container you touch that is touching any container, etc., will be worth zero points. TIP: Get away from your containers.

- Opponent robots in contact with containers in the alliance scoring zone will not affect the determination of the base score;
- A container may touch the field border.

PAGE 11, RULE SC11

- Similar to the containers, if a robot from your own alliance or the opposing alliance is on top of a robot and neither robot violates this rule, then each robot scores 25 points;
- If a RED robot is in scoring position on the top platform and an approaching BLUE robot on the ramp pushes part of the RED robot into the air, the RED robot scores 25 points unless the BLUE robot has moved the RED robot into a position at the end of a match that violates this rule;
- If a RED robot is in scoring position on the top platform and the match ends with this robot being touched by the other RED robot that is not in scoring position, neither robot scores 25 points.

THE ROBOT

PAGE 25, RULE K3

- There have been many questions on figuring the total cost of additional components, particularly with regards to labor from a machine shop. If a machine shop is a team partner, i.e., the shop's name is part of the team's name, their labor can be excluded from the cost of the robot. Conversely, if the machine shop is not a team partner:
  - You must include their labor charges;
  - If they donate their labor, you must include the fair market value of their labor.
- Additional components can be bought from any supplier unless specifically restricted.
- Regarding accounting for glue, lubricants, nails, nuts, bolts, washers, and other fasteners, typically this may be excluded from the cost of the robot; however, any bolts, threaded rod or specialty fasteners that cost more than $1.00 each must be accounted for. Containers of glue and containers or cans of lubricant are excluded.

PAGE 25, RULE K5

- There is **no** 2003 requirement to contain your custom circuits in a "BUD" box.
- In order to facilitate the use of custom circuits (see Section 3.2.7 in The Robot), you may buy or make printed circuit boards with no components and account for the cost of the boards as part of the $3,500 total cost of the robot (Rule K3). Additional electronic components placed on the boards must be accounted for as per Rule K5.

KIT OF PARTS

MISSING OR BROKEN

For any missing parts or broken parts, please contact us at:

frcparts@usfirst.org

LATE SHIPMENT – More Information

The following items will be shipped to teams sometime during the week of 1/13/2003. **The 40A breakers are not yet available. If FIRST does not have them soon, the remaining items below will be shipped.**

1. SMC pneumatic parts:
   - Double Solenoid Base Ported Valve
   - Flow Control
   - Fitting, Straight ¼" Tube
   - Fitting, 90 Elbow ¼" Tube
   - Fitting, Tee Union ¼" Tube
   - Fitting, Male Run T 1/8 NPT ~ ¼" Tube
   - ¼" OD Tubing
2. Metric key stock; fits the shaft on the CIM (Chiaphua/Atwood) motor only; size is 0.079" x 0.094" x 1"; 2 pieces
3. Reflexite retro-reflective tape, 8" sample
4. Various decals/stickers.
5. 40A Snap Action circuit breakers.

SUPPLIER LIST including special parts made for FIRST

The supplier list is now available on the FIRST website at:

http://www.usfirst.org/robotics/2003/docs.htm

FIELD / CORRECTIONS

There are none for this update.

AUTODESK

There are none for this update.

The 2003 FIRST Robotics Competition
TEAM UPDATE # 4

Date: **January 14, 2003**

PLEASE DISTRIBUTE THIS TO OTHER TEAM MEMBERS!

FIRST will provide rules updates and other important information to teams via the FIRST web site at:

http://www.usfirst.org/robotics/2003/docs.htm

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QUESTIONS?

MESSAGE BOARD
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http://jive.ilearning.com/index.jsp

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- **Please state your inquiry as a question. Some submittals have been lengthy and we have had a great deal of trouble trying to find the question buried within.**
- **Do not reply to posted messages. FIRST is the only official source for answers. Your replies to posted questions slow down the moderating of this forum. Replies other than from FIRST will be deleted.**

AUTODESK, INC. – Correction on How to Contact Autodesk
For all inquiries, please e-mail:

first.entries@autodesk.com

THE GAME

PAGE 10/11, RULE SC9

Oops! SC9 was not changed in the last update to supplement the changes to SC8… so here it is now. Sorry for the disconnect!

Replace SC9 with the following:

SC9 When identifying the multiplier stack, the referees will base their evaluation on the following criteria:

- Only stacks located "in" a scoring zone (as defined in SC8) are eligible to become multiplier stacks;
- The tallest stack in the alliance scoring zone will be determined to be the multiplier stack. Its height is measured in whole Stack Height Units (SHU) as described previously in ***Section 7.6***;
- Multiplier stacks must have a continuous chain of contact through a set of containers from the Scoring Zone (stack starts with a container touching the carpet in the Scoring Zone) to the highest point on the stack (e.g., stacks supported EXCLUSIVELY by an opponent robot, in which there is no direct contact between the stack and the Scoring Zone, are ineligible to be the multiplier stack – any containers in such a stack are only included in the base score, as identified in Rule SC8).
- If ANY part of an alliance robot is in contact with ANY container in a stack, that stack will not be eligible to be the multiplier stack. In this event, the next-tallest stack will become the multiplier stack;
- There will be only one multiplier stack. If there are multiple stacks of the same height, the redundant stacks will be scored normally as part of the alliance base score;
- Opponent robot contact with a stack will not affect multiplier stack eligibility.

THE ROBOT

SNAP ACTION CIRCUIT BREAKERS

Unfortunately, the 40A Snap Action Maxi-style auto-resetting circuit breaker is not yet available but should be shortly. In the interim, it is acceptable to use the extra 30A breakers (FIRST shipped each team extra 30A breakers) with the CIM and ½" drill motors. The best solution, however, is to use the 40A breakers for this application when you receive them.

ROBOT "ASSEMBLIES"

There has been a plethora of questions about robot assemblies so, to make this abundantly clear and to **mercifully** constrain the assembly possibilities, Rule M5 is modified as follows:

PAGE 17, RULE M5

Change the last sentence in Rule M5 to be a bullet.

Add to Rule M5:

- The robot and all of its mechanisms combined must adhere to Rule K3 (cost);

- The robot and all of its mechanisms combined can only have 1 control system and can use only the motors in the 2003 Kit of Parts in the quantity provided.

PAGE 20, RULE M17

This rule was drafted to attempt to prevent damage to our playing field, which includes the ramp structure, field borders, etc. Because we allow you to fabricate a wheel, it really doesn't make much sense for us to say:

"The outer surface of off-the-shelf wheels may be modified by removing tread material only."

Please delete this sentence; however, now we need to address the issue of "anti-traction" devices or anchors, i.e., devices designed to hold you firmly in one place. Anchors cannot use metal in contact with the carpet to "stay put." Similarly, metal traction or anchor surfaces are not allowed on the ramp surfaces.

Add the following to Rule M17:
Anchors, i.e., devices that are deployed/used to attempt to keep one's robot in one place and to prevent from being moved by another robot, cannot use metal in contact with the carpet to "stay put." Similarly, metal traction or anchor surfaces are not allowed on the ramp or platform.

PAGE 25, RULE K3

There is still some confusion about how to account for purchased parts vs. fabricated parts, particularly when the labor for parts is donated. Try this:

- If you were billed, it counts in the cost;
- If a machine shop makes a part and **involves** the students, you can consider the shop as an educational/inspirational sponsor and its labor does not have to be counted. While the term "involves" is not precise and leaves a bit of interpretation up to the individual teams, any shop that spends time with the students to explain the planning, processes, material considerations, safety concerns when operating shop machines, etc., will have "involved" the students and met the spirit of this rule.

This interpretation of this rule is to encourage community involvement with the teams while exposing the students to science and technology.

KIT OF PARTS

MISSING OR BROKEN

For any missing parts or broken parts, please contact us at:

frcparts@usfirst.org

LATE SHIPMENT

The 40A breakers are not yet available.

The following items were shipped yesterday, Monday 1/13/2003, via FedEx 2nd day.

1. SMC pneumatic parts:
   - Double Solenoid Base Ported Valve
   - Flow Control
   - Fitting, Straight ¼" Tube
   - Fitting, 90 Elbow ¼" Tube
   - Fitting, Tee Union ¼" Tube
   - Fitting, Male Run T 1/8 NPT ~ ¼" Tube
   - ¼" OD Tubing
2. Metric key stock; fits the shaft on the CIM (Chiaphua/Atwood) motor only; size is 0.079" x 0.094" x 1"; 2 pieces
3. Reflexite retro-reflective tape, 8" sample
4. Various decals/stickers.

FIELD

The distance from the field surface to the underside of the lower pipe of the truss on either side of the platform/ramp structure at midfield is:

14-5/16" +/-

We build our fields in many different venues with several types of floors and **we cannot guarantee the exact distance under this pipe**. Allow for variations of as much as ½" or more.

The surface of the angle aluminum that makes up the bottom portion of the field border that contacts the carpet and faces into the playing field is 3" tall.

AUTODESK

There are none for this update.

The 2003 FIRST Robotics Competition
TEAM UPDATE # 5

Date: **January 16, 2003**

PLEASE DISTRIBUTE THIS TO OTHER TEAM MEMBERS!

FIRST will provide rules updates and other important information to teams via the FIRST web site at:

http://www.usfirst.org/robotics/2003/docs.htm

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QUESTIONS?

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- **Limit each message board submittal to ask only 1 question at a time. This will allow us to categorize your question and will enhance our ability to respond in a timely manner.**
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AUTODESK, INC.
For all inquiries, please e-mail:

first.entries@autodesk.com

THE GAME

PAGE 7, RULE GM8

This is a reminder that drivers must **ALWAYS** set-up/connect under their respective team numbers as displayed on the LED's.

PAGE 7, RULE GM9

Replace GM9 with the following:

During the setup for each match, robots must be placed totally within their designated starting areas. In the Qualification Matches, a robot will be placed in the starting box that that is in front of its driver but on the opposite side of midfield, i.e., as viewed from the driver's perspective, the right-most driver's robot will be in the right starting spot and the left-most driver's robot will be in the left starting spot. In the Elimination Rounds, the robots can go in either position. They must sit on the carpet unconstrained in the same position as when they were in the sizing box. See T***he Robot Section*** for more detailed information.

PAGE 11, RULE SC14

Modify the 3rd • bullet in the 3rd square bullet as follows:

If 1 team is disqualified, the match will be played as a 2 on 1 and scoring is as normal; **the DQ'd team will receive 0 QP's**;

Modify the 4th • bullet in the 3rd square bullet as follows:

If an entire alliance is disqualified, the other alliance receives double their own score in QP's; **the DQ'd alliance will receive 0 QP's;**

PAGE 11, RULE SC15

Modify the 3rd • bullet in the 4th square bullet as follows:

If 1 team is disqualified, **that entire alliance is DQ'd**; **the DQ'd alliance will receive 0 EP's and the other alliance receives double their own score in EP's;**

DELETE the 4th • bullet in the 4th bullet.

PAGE 13, RULE V4

Change the 2nd sentence as follows:

Repeated minor infractions will result in increasingly severe penalties. Referees will indicate penalties by throwing down flags color-coded to indicate which alliance**/team** is being penalized.

PAGE 14, ADD DQ10

A robot cannot inhibit the movement of another robot by pinning against the field border, diamond plate or platform/ramp structure for more than 10 seconds. If a robot has been pinned for 10 seconds, the team with the pinning robot will be told by the referee to release the robot and back away approximately 3 feet. Once the pinning robot has backed off by 3 feet, it may again attempt to pin its opponent and, if successful, the 10 second count starts

over. If a referee determines this rule to be violated, the pinning alliance/team will be given 2 minor penalties. Another violation of this rule or another warning will mean that its robot will be disabled for the remainder of that match after it has backed away from its opponent; and disqualified after the match ends.

A robot cannot intentionally lift a robot up such that it is totally off the playing field, in which case, the robot has been effectively removed from competing. If a referee determines this rule to be violated, the offending alliance/team will be given 2 minor penalties. Another violation of this rule or another warning will mean that its robot will be disabled for the remainder of that match after it has backed away from its opponent; and disqualified after the match ends.

THE ROBOT

SPEC SHEETS

The Specification sheets for many kit parts are now available on the FIRST website.

PAGE 18, RULE M8

There have been numerous design questions relative to the installation/placement of the rotating light. The purpose of M8 is to insure that your drivers, the referees, the scorekeeper, and the judges can identify your robot and that the audience has some idea of who's who; and to make sure that it is installed to enable EASY CHANGEOVER OF THE LIGHT LENSE.

A momentary "loss" of visibility of this beacon is allowable; however, 99% of the time FIRST requires that the top 4" of the light be visible.

PAGE 20, RULE M17

Add the following sentence to the end of this rule:

Gaining traction by using sandpaper or sandpaper-like material is not allowed.

KIT OF PARTS

MISSING OR BROKEN

For any missing parts or broken parts, please contact us at:

frcparts@usfirst.org

SEAT MOTORS

The Robot section of the manual made reference in many places to a seat motor in anticipation of us having seat motors to include in the Kit of Parts. Unfortunately, FIRST did not receive seat motors this year.

LATE SHIPMENT

The 40A breakers are not yet available. They are in production and we expect to receive them next week. We expect to mail 4 of them to each team shortly.

MICROSOFT SOFTWARE

This already went out as an e-mail blast to teams on 1/14/2003 and is repeated here as a reminder.

Greetings Teams:

Earlier in the season we informed you that Microsoft would be donating copies of Microsoft Visual Studio NET, Project 2002, and Frontpage 2002 software for inclusion in the kit of parts. As our recent Team Update informed you, Microsoft will be unable to donate either Project or Frontpage this year.

With regard to Visual Studio Net, due to the higher than anticipated team registration, we have run out of donated copies of this product. Teams were shipped their copies on a "first paid, first served" basis. If you received the software and do not intend to use it, would you please contact us at frcteams@usfirst.org to make arrangement to return it to FIRST? We will provide you with a shipping number so your team does not incur the cost and we will use your copy to supply a team that did not receive it. Likewise, if you have not received a copy of Visual Studio NET, please contact us now at frcteams@usfirst.org and let us know that you would like to be on a list to receive a copy should returns come through.

We are grateful to Microsoft for their generosity and look forward working with them in 2004. We thank you for your understanding and hope that you will help us if you can.

FIELD / CORRECTIONS

There are none for this update.

AUTODESK

We have received many calls and questions about the Autodesk Animation award. There is no award by that name. The Autodesk award for animation is called the Autodesk Award for Visualization. The scoring criteria and other information on the award can be found beginning on page 17 in the Awards section of the 2003 FIRST Robotics Competition manual.

The 2003 FIRST Robotics Competition
TEAM UPDATE # 6

Date: **January 21, 2003**

PLEASE DISTRIBUTE THIS TO OTHER TEAM MEMBERS!

FIRST will provide rules updates and other important information to teams via the FIRST web site at:

http://www.usfirst.org/robotics/2003/docs.htm

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QUESTIONS?

MESSAGE BOARD
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- **Please state your inquiry as a question. Some submittals have been lengthy and we have had a great deal of trouble trying to find the question buried within.**
- **Do not reply to posted messages. FIRST is the only official source for answers. Your replies to posted questions slow down the moderating of this forum. Replies other than from FIRST will be deleted.**

AUTODESK, INC.
For all inquiries, please e-mail:

first.entries@autodesk.com

THE GAME

PAGE 14, DQ7
Cancel DQ7, as this is very similar to the intent of DA5.

PAGE 14, DQ10 (ORIGINALLY ADDED VIA TEAM UPDATE #5)
Cancel DQ10.
Add DA6 as follows:
A robot cannot inhibit the movement of another robot by pinning against the field border, diamond plate or platform/ramp structure for more than 10 seconds. If a robot has been pinned for 10 seconds, the team with the pinning robot will be told by the referee to release the robot and back away approximately 3 feet. Once the pinning robot has backed off by 3 feet, it may again attempt to pin its opponent and, if successful, the 10 second count starts over. If a referee determines this rule to be violated, the pinning alliance/team will be given 2 minor penalties. Another violation of this rule or another warning will mean that its robot will be disabled for the remainder of that match after it has backed away from its opponent.

A robot cannot intentionally lift a robot up such that it is totally off the playing field, in which case, the robot has been effectively removed from competing. If a referee determines this rule to be violated, the offending alliance/team will be given 2 minor penalties. Another violation of this rule or another warning will mean that its robot will be disabled for the remainder of that match after it has backed away from its opponent.

Add DA7 as follows:
During autonomous mode, if a robot:

- has created a safety issue/unsafe situation during the autonomous period, it will be disabled and re-enabled after expiration of the autonomous period unless, in the judgment of a referee, a robot should not be re-enabled for violation of another rule;
- pins another robot and/or tires are spinning, the robot(s) will be disabled and re-enabled after expiration of the autonomous period unless, in the judgment of a referee, a robot should not be re-enabled for violation of another rule.

PAGE 15, RULE T6
Change the 1st bullet to read as follows:

- ***For Regional Events*:** From the top eight (8) seeded teams, **starting with the #1 seed and proceeding sequentially through the #8 seed**, a pre-college student representative selects an alliance partner from among the remaining un-partnered teams. After all eight teams have selected their first partner, the process repeats and a second partner is selected.
- ***For The Championship Event*:** Teams are evenly divided up into 4 "divisions." Within each division, from the top eight (8) seeded teams, **starting with the #1 seed and proceeding sequentially through the #8 seed**, a pre-college student representative selects an alliance partner from among the remaining un-partnered teams. After all eight teams have selected their first partner, the process repeats and a second partner is selected.

THE ROBOT

SPECIFICATION SHEET – SKIL-BOSCH MOTOR PINION

The engineering drawing that Skill-Bosch provided in PDF format for the pinion on the 1/2" drill motor cannot be read over our web site. Its resolution is not adequate.

Skil-Bosch Motor Pinion Specs

Teams may find it difficult to read the Skil-Bosch specs for the pinion on the 1/2" drill motor that is posted on our web site, drawing # 2606316188. The following are the critical parameters of this 15-tooth gear:

pitch diameter = 10.5 mm	addendum diameter = 12.81 mm
pressure angle = 20 degrees	root diameter = 9.31 mm
pitch module = 0.7	base diameter = 9.857 mm
tooth thickness = 1.369 mm	

PAGES 22-23, Update to C18 & C29

In order to give teams additional flexibility in the design and use of custom circuits used on the robot, FIRST has decided to allow teams to connect their custom circuit(s) to the programming port on the Robot Controller. This allows direct serial communication with the Basic Stamp IIsx CPU inside the Robot Controller. Teams are cautioned that application of improper voltages (greater than normal RS232) to the programming port may damage the Robot Controller and are not covered under warranty.

Innovation First does not provide technical support for teams wishing to utilize this feature. Program port pinout can be found in the document titled “Robot Controller Serial Port (Program Port)” on the Innovation First web site. Accessing the programming port from PBASIC is documented in the PBASIC programming manual from Parallax, Inc. as part of the SERIN and SEROUT commands.

KIT OF PARTS

MISSING OR BROKEN

For any missing parts or broken parts, please contact us at:

frcparts@usfirst.org

LATE SHIPMENT

The 40A breakers arrived today. We expect to mail 4 of them to each team shortly along with a Yaw Sensor Connector Kit. This kit consists of a plastic connector and 3 pins (plus 3 spare pins).

FIELD / CORRECTIONS

There are none for this update.

AUTODESK

Nothing for this update.

AWARDS

There has been some team confusion about the Chairman's Award Executive Summary page. There were two versions on the web. In trying to give teams the opportunity to work on the award, the temporary data/form was posted in November. When the award was updated and finalized, the posting was not. The correct Chairman's Award Executive Summary form is in the hard-copy Manual, on the CDROM Manual, and in the in the Awards section of the on-line Manual. The outdated link on the FIRST website has been removed.

The 2003 FIRST Robotics Competition
TEAM UPDATE # 7

Date: **January 27, 2003**

PLEASE DISTRIBUTE THIS TO OTHER TEAM MEMBERS!

FIRST will provide rules updates and other important information to teams via the FIRST web site at:

http://www.usfirst.org/robotics/2003/docs.htm

Please check the team updates portion of the web site on a regular basis to insure that your team does not miss critical information about the 2003 FIRST Robotics Competition. FIRST recommends assigning at least one team member the duty of keeping up to date on all team updates. This person or group should be responsible for distributing information contained in team updates to the appropriate team members.

QUESTIONS?

MESSAGE BOARD
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For all inquiries, please e-mail:

first.entries@autodesk.com

THE GAME

PAGE 4, SECTION 7.1
Replace the last sentence with the following:
The remaining 2 players and a coach from each team must stand in their driver station **behind a line that is 3' from the base of the driver station.**

PAGE 4, SECTION 7.3
Replace the 2nd paragraph with the following:
The only operator control allowed during the autonomous robot control period is activating of the Emergency Stop (E-Stop) buttons located in the driver stations, which will disable that robot's power supply. **A team player, not a coach, is allowed to cross the 3' line in order to activate the E-Stop button.**

THE ROBOT

NIPPON-DENSO MOTOR
The specs for the Nippon-Denso window motor are now available on the FIRST website.

SKIL-BOSCH ½" DRILL MOTORS
Cautionary Note About Skill-Bosch Drill motors!!!!!

DO NOT attempt to unsolder the wires that are attached to the Skill-Bosch motors. The plastic housing that holds the brush assemblies will be damaged if you do. ***The high temperature of the soldering process causes the plastic to deform and destroys the motor.*** Teams should make their electrical power connections to the motors' pre-attached wires, not directly to the brush holders.

KIT OF PARTS

MISSING OR BROKEN
For any missing parts or broken parts, please contact us at:

frcparts@usfirst.org

LATE SHIPMENT
The 40A breakers are in. They were shipped Friday, 1/24/2003, along with a Yaw Sensor Connector Kit. This kit consists of a plastic connector and 3 pins (plus 3 spare pins). Shipments to Brazil, the UK, and Puerto Rico will be sent express mail. Shipments to Canada will all go to Mark Breadner for distribution.

OPTICAL SENSORS - CLARIFICATION
There has been some confusion on the message boards regarding whether or not optical sensors, other than the Banner Engineering sensors listed in the Restricted Parts List, are allowed, and what restrictions there are on their use. The correct answer is that Optical Sensors, other than the Banner Engineering sensors, are allowed as part of the Additional Electronics listed at the top of the Electronics category and are subject to the restrictions in Rule K5. Optical sensors used on the robot, whether from Banner, Digi-Key or Future

Active, may be used to emit and sense light both within the robot and on the field, such as for line tracking or container location. It is not acceptable to use light emitters (or any other means, for that matter) to try to interfere with other robots' control systems. It is not acceptable to use optical sensors (or anything else other than the Innovation First radio modems) to provide remote control input to the robot from outside the playing field borders.

PNEUMATICS

This year, like the last few years, free cylinders will be available to all the teams. Each team is allowed 3 free cylinders. However, there may be an allotment of additional cylinders so if you have already ordered 3, please check with HPE Automation if you need more.

YOU CAN ONLY USE THE 1 CYLINDER FROM THE KIT OF PARTS PLUS THE 3 FREE CYLINDERS = 4 TOTAL ON YOUR ROBOT AND ITS ASSEMBLIES.

The same procedure will be used this year as last year. The last page of the Pneumatics manual is the ordering guide. Please fax your orders to the number given on that page.

All custom ordered cylinders will be shipped from Bimba Manufacturing this year. Bimba has arranged for the teams to check the status of their orders on their website. The process is quite simple.

- Go to www.bimba.com
- On the home page screen, there is a link to the tracking portion of the website. It is labeled "Order Tracking". Click on the wording. You will be brought to a screen asking for your "Customer P/O Number".
- Type in your team number;
- In the other box type in the "ship to zip code" you used on your order and click on find.

All the information is available for you to track your orders. In the event you have a second order for cylinders, your "Customer P/O Number" will be your team number followed by the letter "A". For subsequent orders, we will use your team number followed by the letter "B" etc. The Bimba part number is broken down in the following way:

- The first two digits are the bore size. ¾" = 04, 1-1/2"= 17, and 2" =31;
- The next digit or two represents the stroke;
- The final two or three letters represent the model number.

The following are a few examples of some of the part numbers:

Number	**Description**
048DP	¾" bore by 8 " stroke
1712DP	1-1/2" bore by 12" stroke
315DXP	2" bore by 5" stroke

FIELD / CORRECTIONS

There are none for this update.

AUTODESK

Nothing for this update.

ADMINISTRATIVE/MATERIAL HANDLING/SHIPPING

PAGE 9, SECTION 4.6

This went out in an e-mail blast to all teams on Wednesday, 1/22/2003, and is repeated here as a courtesy.

Greetings Teams!

We want to remind you to update your Team Social attendance numbers via the Team Information Management System, at my.usfirst.org (Step 2 of 6.) If you have already entered this information please take a moment to go back and check your entry to make sure it is accurate.

Over the next couple of weeks we will be assessing which events will be designated as Streamlined (NO Team Social) and plan to make the listing available prior to February 7th on our website.

Please contact team support and frcteams@usfirst.org if you have any questions.

PAGE 9, SECTION 4.6.2

Please change the date in section 4.6.2, "Deadline for Attendance Count" to .....no later than February 21, 2003.

TEAM UPDATE # 8

Date: **January 28, 2003**

PLEASE DISTRIBUTE THIS TO OTHER TEAM MEMBERS!

FIRST will provide rules updates and other important information to teams via the FIRST web site at:

http://www.usfirst.org/robotics/2003/docs.htm

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QUESTIONS?

MESSAGE BOARD

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AUTODESK, INC.

For all inquiries, please e-mail:

first.entries@autodesk.co

THE GAME

Nothing for this update.

THE ROBOT

PAGE 27, FLOWCHART

Referring to the flowchart on page 27 of The Robot Section of the manual, some of the EDU kit may be used on the FIRST Competition robot and some may not. There are four different paths through the flowchart for different parts from the EDU Kit:

- The operator interface is meant to control the FIRST Competition robot and must be used;
- None of the remaining electronics or motors may be used;
- The metal, wires, and sprockets in the EDU kit may be used and additional may be purchased from Innovation First within the quantity and cost limits;
- The wheels may be used and additional may be purchased from Innovation First within the quantity and cost limits.

However, you may not want to use these parts. Having a usable EDU robot now for prototyping or programming practice and next year for training purposes may be more valuable than using the parts on your FIRST Competition robot.

KIT OF PARTS

MISSING OR BROKEN

For any missing parts or broken parts, please contact us at:

frcparts@usfirst.org

PNEUMATICS – Clarification on the cylinders

For those of you that we confused about what cylinders and the total number of cylinders you can use in Team Update #7, you can use 4 legal cylinders total on your robot and its assemblies. We did not mean to infer that you had to use the 1 cylinder that was included in your kit of parts.

FIELD / CORRECTIONS

The blueprints for the FIRST metal ramp are now available on the FIRST website.

AUTODESK

Nothing for this update.

ADMINISTRATIVE/MATERIAL HANDLING/SHIPPING

Nothing for this update.

January 30, 2003	TEAM UPDATE	# 9

PLEASE DISTRIBUTE THIS TO OTHER TEAM MEMBERS!

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QUESTIONS?

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AUTODESK, INC.

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first.entries@autodesk.com

THE GAME

REMINDER

Teams are not allowed on the field or in the driver stations at any time except during their scheduled practice times on Thursday and scheduled competition match times on Friday and Saturday.

PRACTICE DAY – THURSDAY AT EACH EVENT

Typically, practice rounds are run for all teams on Thursday from 10:00am until about 6:00pm, depending on the number of teams registered. Two years ago, teams had two 10-minute practice sessions during the day. This past season, teams had three 6-minute practices during the day.

We are working on how practice will be run this season and this information will be available in the Tuesday, 2/4/2003 Team Update #10. We have, however, decided the following:

- You will be assigned practice times;
- THERE IS NO SWAPPING OF PRACTICE TIMES WITH OTHER TEAMS;
- If you miss your practice time, there will be no make-up sessions;
- No one will be allowed on the field while robots are running in autonomous mode.

PAGE 4, SECTION 7.3

Autonomous control period – clarification:

The 2nd paragraph in The Game, Section 7.3, allows the use of the E-Stop button during the autonomous period. The intent is for the E-Stop buttons to act as a safety device, **not** for team use to, in any way, control/modify control of its robot during the 15-second autonomous period. See The Game, Rule GM22.

PAGE 8, RULE GM22

Replace GM22 with the following:

Two Emergency Stop (E-Stop) buttons are located in each alliance station, one for each team. Pressing an E-Stop button will cause the corresponding team's robot to be disabled. Any member of a team may press the E-Stop button corresponding to their own robot. A team that has pressed its E-Stop button may release it, thus re-enabling their robot at any time prior to the end of a match**; however, activation of the E-Stop button during the autonomous period will result in a team's robot being disabled for the remainder of the autonomous period AND for the first 30 seconds of the driver control period.**

The E-Stop buttons are intended for remote robot shut down during a match in the event of safety hazards and will not otherwise affect match scoring or duration. The E -Stop buttons may not be used to remotely control the robot during autonomous mode.

PAGE 9, RULE S1
REMINDER - IMPORTANT SAFETY ISSUE!!!!!
Bring plenty of ***SAFETY glasses***. You need them at all times in the Pit area and while competing. THIS INCLUDES PRACTICE DAY ON THURSDAY. Please be safe!

PAGE 9, RULE S3
REMINDER - IMPORTANT SAFETY ISSUE!!!!!
Appropriate footwear is required at all times while in the pit area and while competing. THIS INCLUDES PRACTICE DAY ON THURSDAY. No bare feet, no sandals, no open-toed shoes, no high heels, etc. Please be safe!

THE ROBOT

SKIL-BOSCH ½" DRILL MOTORS – REPEAT OF PREVIOUS WARNING
Cautionary Note About Skil-Bosch Drill motors!!!!!

DO NOT attempt to unsolder the wires that are attached to the Skil-Bosch motors. The plastic housing that holds the brush assemblies will be damaged if you do. ***The high temperature of the soldering process causes the plastic to deform and destroys the motor.*** Teams should make their electrical power connections to the motors' pre-attached wires, not directly to the brush holders.

PAGE 20, RULE C1
Replace the 1st paragraph with the following:
The control system is provided to allow wireless control of the robots. The Operator Interface, Robot Controller, Servos, Speed Controllers, Relay Modules, Radio Modems, Batteries, Battery Charger, Power Supply, 9-pin cables, **Maxi-style breaker panel, ATC breaker panel**, circuit breakers, fuses, and joysticks may not be tampered with, modified or adjusted in any way, with the following exceptions:

KIT OF PARTS

MISSING OR BROKEN
For any missing parts or broken parts, please contact us at:

frcparts@usfirst.org

FIELD / CORRECTIONS

There are none for this update.

AUTODESK

Nothing for this update.

ADMINISTRATIVE/MATERIAL HANDLING/SHIPPING

Nothing for this update.

February 4, 2003	TEAM UPDATE	# 10

PLEASE DISTRIBUTE THIS TO OTHER TEAM MEMBERS!

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AUTODESK, INC.

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first.entries@autodesk.com

THE GAME

PRACTICE DAY – THURSDAY AT EACH EVENT

Last season, there was a 10-minute running clock, which was comprised of 6 minutes of driving time and a 4-minute field reset. Each team had 3 practice sessions spread out over the day.

This year we will use a 10-minute running clock (it will not stop all day) again but broken up as follows:

3-minute field set-up/reset
15-second human player time
15-second autonomous period
1:45-driver control period
2:30-field/robot set-up/reset by team members
15-second human player time
15-second autonomous period
1:45-driver control period
10 minutes

The human players would NOT have to start or end on the player mats near the gates but this is good practice as 10 seconds to enter and leave the field is not much time. The autonomous period would actually be initiated from the control console at the scorer's table.

Each team would get three (3) 10-minute cycles during the day, which are actually 6 practice matches.

PAGE 7, RULE GM8

Replace GM8 with the following:

During the setup for matches, each team must connect their operator interface to a specific driver station within their alliance station as designated by FIRST. **The Qualification Match schedule distributed to the teams will indicate either a left or right driver position as viewed from the driver station looking toward the ramp.** Teams will be **directed** during queuing to their designated driver station location.

PAGE 10 + 11, RULE SC8 + SC9

Scoring clarification:

Example: 11 boxes in a scoring zone, all legal, no stack, i.e., all of them rest on the carpet. This would be a score of 10 because it is the total number of containers – the number of containers in the tallest stack.

THE ROBOT

PAGE 18, RULE M7

Numbers on robots must conform to the specifications in this rule. While this may seem insignificant in relation to the other rules, referees, judges, and scorekeeper must be able to quickly identify robots.

PAGE 19, RULE M12

Discussion:

In order to facilitate the use of off-the-shelf suction cups, especially those with built-in fittings, connections or supply tubing, additional fittings such as reducers and connectors will be permitted to connect the suction cup to the ¼" tubing supplied in the 2003 Kit of Parts.

Use of suction cups with built-in pumps **is not** permitted. Use of suction cups that use lever action to activate and release **is** permitted.

Vacuum in the suction cup can only be produced by:

- Forcing the cup down to evacuate air;
- Evacuating air by lever action;
- Withdrawing air by producing vacuum with the Kit provided air cylinders.

Replace M12 with the following:

Only items listed under the PNEUMATICS section of the Kit list may be used to store, generate or transmit compressed air or vacuum, with the following exceptions:

- Suction cups may be fabricated from legal Kit parts, as defined in rule K1 below **or purchased as off-the-shelf items;**
- **Additional fittings, such as reducers and connectors, will be permitted to connect the suction cup to the ¼" tubing supplied in the 2003 Kit of Parts;**
- Tubing may be compressed in order to block the flow of air;
- Tubing may not be compressed in order to generate compressed air or vacuum;
- Only the allowed air cylinders **and permitted suction cups** may be used to generate vacuum.

KIT OF PARTS

MISSING OR BROKEN

For any missing parts or broken parts, please contact us at:

frcparts@usfirst.org

25-PIN SOLDER CUPS

These are not missing from your 2003 Kit of Parts; they were not supplied. If you need one, try Radio Shack or other electronic outlets.

PNEUMATICS

Request from FIRST:

If any teams are not using the pneumatics, we would ask that they be returned to FIRST to be used as replacement parts. We have 790 teams this year and only had 800 sets of pneumatics. Contact frcparts@usfirst.org for instructions on returning them. Thank you.

SKIL-BOSCH DRILL MOTORS

Replacement Drill Motors and Gearboxes:

S-B Power Tool Co. has experienced a large demand from FIRST teams for spare drill motors and gearboxes, which has significantly drawn down its US inventory of these items (in one case, a team wanted to order a dozen drill motors). Because of this, S-B has ordered additional quantities from their manufacturing plants in Germany and Switzerland and they will be arriving at the S-B facility in New Jersey over the next few weeks. In the interim, please limit your orders to quantities that you need for legitimate replacement purposes of the ones put in the Kit. We ask your cooperation so that all teams needing replacements will be able to get them.

FIELD / CORRECTIONS

There are none for this update.

AUTODESK

SERVICE PACKS AVAILABLE FOR AUTODESK INVENTOR 6 AND 3DS MAX

To increase the performance of Autodesk Inventor 6, it is highly recommended that you download the following plug-ins:

- First, download Service Pack #1;
- Second, download Service Pack #2.

For those of you working with both Autodesk Inventor and 3ds max, it is also recommended that you download Service Pack #3, the Viz/Max translator plug-in, which will allow you to import Inventor files into 3ds max. NOTE: you must first install the Inventor Service Packs numbers 1 and 2 before you install number 3.

Service Pack #1 available at: http://support.autodesk.com/getDoc.asp?id=DL403697

Service Pack #2 available at: http://support.autodesk.com/getDoc.asp?id=DL403916

Service Pack #3 : http://support.autodesk.com/getDoc.asp?id=DL403918

INSTRUCTIONS ON COMPRESSORS FOR AUTODESK AWARD FOR VISUALIZATION (ANIMATION AWARD)

Preferred compressors: Cinepak, Intel Indeo or QuickTime.

Notes on all three compressors:

- Cinepak has been a very popular choice and has had good results in most situations. (Codec's have strengths in different situations.) This is a good recommendation.
- Intel Indeo is another one supplied by Windows but is not as popular. Teams may use it if they like.
- The rules also allow for QuickTime. This is another widespread and popular codec, and, in fact, it is included on the 3ds max CD.

The main issue is if the 900-frame animation were compressed to fit on the CD and not lose quality. Without compression, the animation might need 1 and 1/2 CD's!

With the Codec's compression quality slider (0-100%), you can squeeze it down so it's nice and small but a rather poor image. You need to keep it high enough (say, 65%) to get it to look good and small enough to fit on the CD. (This quality slider choice displays as part of the Render options within 3ds max.)

Test! Test!

One tip:

1. Create the original animation and render it out as a series of sequentially number 640x480 Targa files, e.g., Targ0000.tga, Targ0001.tga, Targ0002.tga and Targ0899.tga.

   If necessary, use the Network Rendering feature to help shorten the rendering time. This is covered in the 3ds max Reference Manual and essentially consists of installing 3ds max on several other computers that have a network connection to the master. These other computers can be accessed by the master copy of 3ds max and harnessed to help with the rendering… even without getting licensed!

2. Then clear the scene from 3ds max and select the Targa file sequence as a background image environment. The steps are covered in the Ref Manual about how to choose an

environment background from a bitmap. The sequence of files is something that 3ds max calls an Image File List (IFL) file and that's pretty easy too, once you've done it. The environment Browse window has a checkmark for an option called Sequence. So you choose Targ0000.tga, check the Sequence option, and 3ds max automatically assumes you wish Targ0000.tga and all the other Targ*.tga files after that.

3. The last step is to render the Animation file. This can be a test of, say 50 - 100 frames, to see how the compression settings are going to work out. Testing this way is quicker than rendering the geometry each time for each test. This method only needs 3ds max to convert previously rendered images to an animation file since there's no geometry in this cleared-off scene.

Any clarification regarding this information should be addressed to Autodesk, Inc.

ADMINISTRATIVE/MATERIAL HANDLING/SHIPPING

The site information pages of the manual are now posted on the web site. This section contains site and drayage addresses, directions and other critical event information including a listing of events that will not have a Friday team social. Please download and print the "site info" section for each event you are attending. Go to:

http://www.usfirst.org/robotics/2003/rgevents.htm

The last page of these sections can be copied and used as address labels for your robots crates.

February 6, 2003	TEAM UPDATE	# 11

PLEASE DISTRIBUTE THIS TO OTHER TEAM MEMBERS!

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http://www.usfirst.org/robotics/2003/docs.htm

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QUESTIONS?

MESSAGE BOARD

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- **Limit each message board submittal to ask only 1 question at a time. This will allow us to categorize your question and will enhance our ability to respond in a timely manner.**
- **Please state your inquiry as a question. Some submittals have been lengthy and we have had a great deal of trouble trying to find the question buried within.**
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AUTODESK, INC.

For all inquiries, please e-mail:

first.entries@autodesk.com

THE GAME

There is nothing for this update.

THE ROBOT

CLARIFICATION OF COMPETITION MODE AND AUTONOMOUS MODE

The table below describes the changes in the comp_mode and auton_mode bits in the PBASIC program. This information is provided by Innovation First, Inc.

Game Phase	comp_mode	auton_mode
Before the Match	high (1)	low (0)
During Autonomous	low (0)	high (1)
During User Control	low (0)	low (0)
After the Match	high (1)	low (0)

The Operator Interface will transmit joystick and button data at all times except during the 15 second Autonomous Phase. This means that Operator Interface controls can be used to select various Autonomous programs prior to the match start (i.e. before the start of the Human Player period).

Any questions should be directed to Innovation First, Inc.

KIT OF PARTS

MISSING OR BROKEN

For any missing parts or broken parts, please contact us at:

frcparts@usfirst.org

PNEUMATICS

To help alleviate the shortage of replacement parts and because last year's pneumatic parts are exactly the same as this year's parts, you can use/re-use pneumatic parts from last season.

120 AMP BUSSMANN MAIN CIRCUIT BREAKERS

Teams wishing to obtain replacement 120A circuit breakers locally may do so as long as they are the same Cooper-Bussmann product as supplied by FIRST in the Kit. It is a HI-AMP surface-mount style, Bussmann part number 185120F. Some automotive supply retailers that service the trucking industry may carry this breaker as a stock item.

FIELD / CORRECTIONS

There is nothing for this update.

AUTODESK

There is nothing for this update.

ADMINISTRATIVE/MATERIAL HANDLING/SHIPPING

THE FOLLOWING INFORMATION WAS ORIGINALLY SENT AS AN E-MAIL BLAST TO TEAMS ON Thursday, February 06, 2003, IN THE MORNING

Greetings Teams!

As the end of the build season draws near we want to touch base with you on a few key points - please read the following carefully.

Team Yearbook Pages

The Team Yearbook page is your opportunity to share valuable information about your team with FIRST. The data collected helps FIRST track important statistics such as how much it cost your team to participate in the competition, the population of the team (e.g., male/female students, teachers, parents, non-technical professionals), class breakdown etc... Many of you, however, know the yearbook pages for their use by the judges at the regional and Championship events. The judges learn important details about your team such us the history, goals, strengths and challenges overcome. All of this gets taken into consideration when the judges make decisions about team awards!

For rookies unfamiliar with the process, you will enter your data via the Team Information Management System - simply log in as you did to register your team. Once in you will see the designated Team Yearbook Pages area. The pages will open on **February 12th and close on February 21st at 5:00 pm EST.**

****IMPORTANT** Please note that, due to printing constraints, there will be no extensions. All yearbook pages must be completed on-line by February 21st 5 PM EST.**

Robot Shipping

Please make sure you read the **Administrative & Shipping/Material Handling** portion of the manual thoroughly. With the robot ship date right around the corner, it is critical you pay careful attention to the following sections:

Section 12 - Crate specifications
Section 13 - Shipping deadline date **(February 18, 2003)**
Section 14 - FedEx Freight System/Donated Shipping
Section 15 - Drayage (Material Handling)

Event Site Information and Team Socials

As noted in Team Update #10, the site information pages of the manual are now posted on the web site. Please go to http://www.usfirst.org/robotics/2003/rgevents.htm and select "Site Info" under your regional event(s). You will find site and drayage addresses, directions and other critical event information including the designation as to which events will not have a Team Social. We highly recommend you print these pages to put in your manual.

Tip! At the end of each section you will find pages that can be printed and used as address labels for your robot crates.

February 11, 2003	TEAM UPDATE	# 12

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AUTODESK, INC.

For all inquiries, please e-mail:

first.entries@autodesk.com

February 11, 2003	TEAM UPDATE	# 12

THE GAME

REGARDING TEAM UPDATE #7, SECTIONS 7.1 + 7.3 – The 3' Rule
As a note of interest, the 3' rule was implemented to make the autonomous mode (no driver interaction) obvious to the audience.

The 3' rule, as implemented by the changes in Team Update #7, may not have considered exotic control systems that are "worn" by team members. So as not to discourage creativity in this area, FIRST will allow these types of controls to be used. The 3' rule will be modified to now allow team members to be standing with both feet **on** the line, not behind the line.

Wearable controls are likely to come in all sizes, shapes, and colors so, if you have wearable controls, be it gloves, headgear, platform hung from shoulder straps or whatever, you must do the following:

- Your OI must be on the diamond plate shelf so that its competition port can be connected with the provided DB15 cable;
- Your wearable controls must be connected to one of the Ports 1 – 4 **AND** this connection must have some sort of quick connect/disconnect (of your choice) in this line;
- Upon expiration of the autonomous period, you may step forward and use your quick connect and begin driving.

It is HIGHLY recommended that all teams/team members keep their hands OBVIOUSLY away from their controls. Use of your controls or, in a referee's judgment, anything that looks like use of your controls during the autonomous period will be cause for Disqualification for that match.

PAGE 4, SECTION 7.1
The last sentence should now read:
The remaining 2 players and a coach from each team must stand in their driver station **on** a line that is 3' from the base of the driver station.

PAGE 4, SECTION 7.3
The 2nd paragraph should now read:
The only operator control allowed during the autonomous robot control period is activating of the Emergency Stop (E-Stop) buttons located in the driver stations, which will disable that robot's power supply. A team player, not a coach, is allowed to **leave** the 3' line in order to activate the E-Stop button.

PAGE 7, RULE GM9
Templates may not be used for robot placement on the field.

February 11, 2003	TEAM UPDATE	# 12

PAGE 5, SECTION 8.2

Replace 8.2 with the following:

Each elimination round will be comprised of 2 matches. The elimination matches will be scored exactly like the qualifying matches except that the points will be referred to as Elimination Points (EP's). Both teams in the losing alliance get their own alliance score in EP's. Both teams in the winning alliance get their own score plus twice the losing alliance's score in EP's. A tie awards the total of the match points to both alliances in EP's. After the two matches are completed, the alliance with the highest combined total **EP** score advances to the next round. In the event of a tied score, **a 3rd and final match will be played. The highest EP score for this match advances. If the alliances are still tied, the winning alliance will be determined using the following criteria:**

- **Alliance with the highest EP score for 1 of the 3 matches in this round;**
- **Higher seeded alliance (1 is highest seed and 8 is the lowest seed).**

PAGE 12, RULE SC14

A revised SC14 is presented here in total as revised by Team Update #5 as a courtesy:

- All teams start each competition event with zero (0) qualification points (QP's) and accumulate QP's throughout the qualifying matches.
- Teams that do not show up for a scheduled qualification match will receive zero (0) match points and zero (0) QP's. Participating teams will receive their match score and QP's as normal.
- The winner of a match is the alliance with the highest score. In each qualifying match, all teams that participated in the match receive QP's as follows:
  - Each team in the losing alliance receives their match score in QP's;
  - Each team in the winning alliance receives their own score plus double the number of match points of the losing alliance in QP's;
  - If 1 team is disqualified, the match will be played as a 2 on 1 and scoring is as normal; the DQ'd team will receive 0 QP's;
  - If an entire alliance is disqualified, the other alliance receives double their own score in QP's; the DQ'd alliance will receive 0 QP's;
  - Ties are allowed. In the event of a tie, all 4 teams get the total of the scores of both the RED and BLUE alliances;
  - At the conclusion of all of the qualification matches, teams are ranked by dropping their lowest QP score and averaging the rest. If teams must play an extra match to balance out the matches in a competition, the score of the extra match ***and*** their lowest score are dropped before averaging. Teams will be ranked using the following hierarchy of criteria (in order from most to least important):

    1. Highest average qualifying point total;
    2. Highest number of matches won during qualification matches;
    3. Highest match score;
    4. Flip of a coin.

February 11, 2003	TEAM UPDATE	# 12

PAGE 12, RULE SC15

Replace SC15 with the following:

- All teams start the elimination rounds with zero (0) elimination points (EP's) and accumulate EP's throughout the elimination rounds.
- **Alliances** that do not show up for a scheduled match will receive zero (0) match points and zero (0) EP's. Participating **alliances** will receive their match score and EP's as normal.
- The alliances play 2 matches. The elimination rounds will be scored exactly like the qualifying matches.
- The winner of a match is the alliance with the highest score. In each elimination match, each alliance will receive EP's as follows:
  - The losing alliance receives their match score in EP's;
  - The winning alliance receives their own score plus double the number of match points of the losing alliance in EP's;
  - If 1 team is disqualified, that entire alliance is DQ'd; the DQ'd alliance will receive 0 EP's and the other alliance receives double their own score in EP's;
  - Ties are allowed. In the event of a tie, both alliances get the total of the scores of both the RED and BLUE alliances;
  - The alliance with the highest total **EP** score advances to the next round;
  - In case of a tie, one more match is played, whereby the highest **EP** score **for this match** advances. If still tied, **the winning alliance will be determined using the following criteria:**
    - **Alliance with the highest EP score for 1 of the 3 matches in this round;**
    - **Higher seeded alliance (1 is highest seed and 8 is the lowest seed).**

PAGE 14, ADD RULE DQ10

Add DQ10 to read as follows:

Use of your controls or, in a referee's judgment, anything that looks like use of your controls during the autonomous period will be cause for Disqualification for that match.

PAGE 15, RULE T8

Modify T8 as follows (the diagrams have been left out to save space):

Alliances competing in the elimination matches are paired as follows:

- **For Regional Events and the Divisions at *The Championship Event*:** All series are 2 matches. **In the event of a tie after the 2 matches, the winning alliance will be determined as described in SC15.** The alliance led by the 1st seed competes against the alliance led by the 8th seed in a series of quarterfinal matches; the alliance led by the 2nd seed competes against the alliance led by the 7th seed in a series of quarterfinal matches, etc. Winners of the quarterfinal matches compete against each other in a series of semi-

final matches. Winners of the semi-final matches compete against each other in a series of final matches with the winning alliance becoming the Regional Champion. ***See Figure T-1*** *below.*

Figure T-1 deleted to save space

- **For *The Championship Event* Championship:** All series are 2 matches. **In the event of a tie after the 2 matches, the winning alliance will be determined as described in SC15.** Division Champions compete against each other in a series of semi-final matches. For the semi-finals, the Division Champions will compete against each other based on the divisions they came from and will not be ranked relative to each other. The division pairings will be announced in the future on the FIRST web site after the division names have been finalized. The winners of the semi-final matches then compete in a series of matches with the winning alliance becoming The Grand Champions. ***See Figure T-2*** *below.*

Figure T-2 deleted to save space

THE ROBOT

PAGE 18, RULE M8

Revolving light visibility:

We thought Team Update #5 that talked about the visibility of the revolving light was clear but given the number of follow-up questions, apparently not. Many questions have been answered on the Message Board as well relative to the light. Please… follow the intent of this rule: mount your light upright, make sure you can change the lens easily, and make sure it is quite visible most of the time.

Likewise, your light should not take abuse and get broken because you decided to travel under the midfield barrier. While we are in no position to tell you how to design your robots and we thoroughly enjoy seeing the creative solutions that you surprise us with season after season, please protect the poor light. It had a long boat trip from Taiwan.

VICTOR SPEED CONTROLLERS - Reminder

A reminder to veteran teams. The Victor 883 speed controllers from previous years are **NOT allowed** this year. The Victor 884 can handle more current and is the only allowed speed controller.

February 11, 2003	TEAM UPDATE	# 12

KIT OF PARTS

MISSING OR BROKEN

For any missing parts or broken parts, please contact us at:

frcparts@usfirst.org

FIELD / CORRECTIONS

There are none for this update.

AUTODESK

There are none for this update.

ADMINISTRATIVE/MATERIAL HANDLING/SHIPPING

There are none for this update.

February 13, 2003	TEAM UPDATE	# 13

PLEASE DISTRIBUTE THIS TO OTHER TEAM MEMBERS!

NOTE: Team updates will continue after the 2/18 robot ship date.

FIRST will provide rules updates and other important information to teams via the FIRST web site at:

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AUTODESK, INC.

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first.entries@autodesk.com

February 13, 2003	TEAM UPDATE	# 13

A SPECIAL MESSAGE TO OUR TEAMS

FIRST has begun to receive questions about plans for the regional events and Houston championship should an act of war or terrorism occur in the next months. We are concerned for the safety and security of citizens facing these threats anywhere in the world, and, in particular, for all our men and women in the military.

While we recognize the impact these acts would have, we also understand the best course of action at this time is to continue to move forward with the existing plans. Therefore, FIRST is continuing to follow those plans and do all that is necessary to deliver superb regional and championship events for all the teams. We are not considering cancellations, extensions, or refunds. We do recognize the right and responsibility of each individual to judge how best to proceed. In the meantime, we'll continue to work toward a great season of Regional events and the Championship.

THE GAME

SCORING

We will attempt to take the mystery out of scoring the containers and stacks in the next update, hopefully with pictures. Imagine how the referees feel about scoring?

THE ROBOT

WHAT CAN I MAKE AFTER MY ROBOT SHIPS +WHAT CAN I FABRICATE BETWEEN EVENTS?

The next update will discuss this issue.

ROBOT INSPECTION SHEET

The robot inspection sheet for 2003 will be available soon.

ROBOT INSPECTIONS

More coming in a future issue.

February 13, 2003	TEAM UPDATE	# 13

KIT OF PARTS

MISSING OR BROKEN

For any missing parts or broken parts, please contact us at:

frcparts@usfirst.org

BUSSMANN 120A. BREAKERS

The Terminal Supply Co in Troy, Michigan has some inventory of the Bussmann 120Amp breakers, and will sell them directly to FIRST teams. The Bussman part number is 185120F. To order by telephone, call 1 800-989-9632, ext. 153.

FIELD / CORRECTIONS

There may be no tapelines on the field as shown in the original field layout drawing included in your manual. Depending on the quality of the carpet seaming, tape may not be necessary. If seams separate, then 2" red and 2" blue gaffers tape will be used.

AUTODESK

AUTODESK VISUALIZATION AWARD - SUBMISSION INFORMATION

Please to go http://support.discreet.com as a technical resource for 3ds max. To reiterate here are some more 3ds max tips:

1. Create the original animation and render it out as a series of sequentially number 640x480 Targa files, e.g., Targ0000.tga, Targ0001.tga, Targ0002.tga and Targ0899.tga.

If necessary, use the Network Rendering feature to help shorten the rendering time. This is covered in the 3ds max Reference Manual and essentially consists of installing 3ds max on several other computers that have a network connection to the master. These other computers can be accessed by the master copy of 3ds max and harnessed to help with the rendering... even without getting licensed!

2. The next step can be accomplished with the Video Post function, but here we offer here a parallel procedure for those not familiar with Video Post.

Clear the scene from 3ds max and select the Targa file sequence as a background image environment. The steps are covered in the Ref Manual about how to choose an environment background from a bitmap. The sequence of files is something that 3ds max calls an Image File List (IFL) file and that's pretty easy too, once you've done it. The environment Browse window has a checkmark for an option called Sequence. So you choose Targ0000.tga, check the Sequence option, and 3ds max automatically assumes you wish Targ0000.tga and all the other Targ*.tga files after that.

3. The last step is to render the Animation file. Before you render the entire animation for submission to Autodesk, use these individual targa files to do some preliminary quality tests. You will quickly see the results of experimenting with different codecs, different compression amounts, etc. This can be a test of, say 50 - 100 frames, to see how the compression settings are going to work out. Testing this way is quicker than rendering the geometry each time for each test. This method only needs 3ds max (or Adobe Premiere, etc.) to convert previously rendered images to an animation file since there's no geometry in this cleared-off scene.

ADMINISTRATIVE/MATERIAL HANDLING/SHIPPING

There are none for this update.

February 14, 2003	SPECIAL TEAM UPDATE – See Robot Section	# 14

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first.entries@autodesk.com

February 14, 2003	SPECIAL TEAM UPDATE – See Robot Section	# 14

THE GAME

There are none for this update.

THE ROBOT

SPECIAL ANNOUNCEMENT

FIRST will allow you to keep your Operator Interface (OI), which came with the Edubot shipment, and not ship it with your robot on Tuesday, 2/18/2003. This will allow you to continue to work on your programming and test it with your Edubot.

If you decide not to ship it with your robot, please **remember to bring it to your 1st competition.**

KIT OF PARTS

MISSING OR BROKEN

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frcparts@usfirst.org

FIELD / CORRECTIONS

There are none for this update.

AUTODESK

February 14, 2003	**SPECIAL TEAM UPDATE – See Robot Section**	**# 14**

There are none for this update.

ADMINISTRATIVE/MATERIAL HANDLING/SHIPPING

There are none for this update.

February 17, 2003	TEAM UPDATE	# 15

PLEASE DISTRIBUTE THIS TO OTHER TEAM MEMBERS!

SPECIAL NOTICE:
ROBOT SHIP DATE CHANGED TO THURSDAY, 5:00 PM EST.
See the announcement in the Administrative section at the end.

NOTE: Team updates will continue after the Thursday, 2/20, 5:00 PM (your time zone) robot ship date.

FIRST will provide rules updates and other important information to teams via the FIRST web site at:

http://www.usfirst.org/robotics/2003/docs.htm

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February 17, 2003	TEAM UPDATE	# 15

AUTODESK, INC.
For all inquiries, please e-mail:

first.entries@autodesk.com

THE GAME

PAGE 3 + 4, SECTION 7.1
Replace 7.1 with the following:

- At the start of each match, 29 containers will be stacked in 5 tiers in a line across the top of the platform.
  - The 1st (bottom), 2nd, and 3rd tiers will have 7 containers;
  - The 4th tier will have 5 containers;
  - The 5th (top) tier will have 3 containers.

  The platform container stacks will be located approximately 3 inches apart and centered across the platform.
- Robots will initially be placed within the starting areas in the alleys at the sides of the platform/ramp structure. Each alliance's robots will start on the far side of the midfield barrier.
- Each alliance will have 2 human players (1 from each team) positioned outside each of the two gates at their end of the playing field. Each human player will have 4 containers stacked near him or her.
- The remaining 2 players and a coach from each team must stand in their driver station on a line that is 3' from the base of the driver station.
- Driver controls must be placed on the diamond plate shelf. See ***GM8*** for more information on this issue including "wearable" controls.

PAGE 7, RULE GM8
This incorporates the information from Team Update #12 regarding wearable controls.
Replace GM8 with the following:
During the setup for matches, each team must connect their operator interface to a **specific** driver station within their alliance station as designated by FIRST. The Qualification Match schedule distributed to the teams will indicate either a left or right driver position as viewed from the driver station looking toward the ramp. Teams will be directed during queuing to their designated driver station location.

Team control systems will come in many sizes, shapes, colors, and configurations including "wearable" controls. Wearable controls, whether they are gloves, headgear, a platform hung

from shoulder straps or whatever, must conform to the following:

- Your OI must be on the diamond plate shelf so that its competition port can be connected with the provided DB15 cable;
- Your wearable controls must be connected to one of the Ports 1 – 4 **AND** this connection must have some sort of quick connect/disconnect (of your choice) in this line;
- Upon expiration of the autonomous period, you may step forward and use your quick connect and begin driving.

THE ROBOT

KEEP YOUR CONTROLS – REVISES FRIDAY'S TEAM UPDATE #14

FIRST will allow you to keep your all of your operator controls (Operator Interface, OI power supply, joysticks, etc.) and not ship it with your robot on THURSDAY, 2/20/2003. This will allow you to continue to work on your programming and test it with your Edubot.

If you decide not to ship it with your robot, please **remember to bring it to your 1st competition.** FIRST does not have replacement controls.

KIT OF PARTS

MISSING OR BROKEN

For any missing parts or broken parts, please contact us at:

frcparts@usfirst.org

FIELD / CORRECTIONS

There are none for this update.

AUTODESK

February 17, 2003	TEAM UPDATE	# 15

There are none for this update.

ADMINISTRATIVE / MATERIAL HANDLING / SHIPPING

THIS WAS SENT AS AN E-MAIL BLAST TO ALL TEAMS ON MONDAY, 2/17/2003 AND IS REPEATED HERE AS A COUTESY TO OUR TEAMS

Due to the incredible snowstorm that has pounded our central, northeastern and southern states, we are extending the robot ship date to **5:00 pm EST Thursday, February 20th**. Please note this extension is for all teams. In the event you still cannot get your robot shipped by this extended date, you must contact frcteams@usfirst.org or call Team Support at the number below. FIRST will review these cases individually.

We also want to take this opportunity to bring to your attention the other quickly approaching deadline dates, so please read the following carefully.

REVISED Robot Ship Date - February 20th. All robots must be shipped by **5:00 pm EST** to the appropriate drayage company. All drayage site information can be found by going to http://www.usfirst.org/robotics/2003/rgevents.htm and selecting the "Site Info" link under the appropriate regional. Remember, you will find site and drayage addresses, directions and other critical event information including the designation as to which events will not have a Team Social here as well. We highly recommend you print these pages to put in your manual. ***At the end of each section you will find pages that can be printed and used as address labels for your robot crates.***

IMPORTANT You must provide proof of shipping to FIRST! This can be done one of two ways. If you ship via FedEx or UPS you Need to go to the Team Information Management System (my.usfirst.org) and click on the **"Robot Shipment"** button (available on Thursday.) You will then be able to enter the Tracking Number on your slip. Please note - Do Not mail hard copy to FIRST! Entering your number will be your proof of shipment. FIRST will verify all tracking numbers and shipments via the FedEx and UPS online systems.

If you ship by another carrier, you must mail us confirmation within 24 hours of shipping. Please read the Administrative & Shipping/Handling portion of the manual, Section 13, pages 18-19 for detailed instructions.

Team Social Numbers - February 21st
If you are attending a regional that is having a Team Social, please go into the Team Information Management System, Step 2 of 6, and make sure your numbers are accurate.

February 17, 2003	TEAM UPDATE	# 15

Team Yearbook Pages - February 21st
Please go to the Team Information Management System and fill these out by 5:00 pm EST on the 21st. Please remember that due to printing constraints there will be No Extensions.

Regional Chairman's Awards - February 21st
Please read your manual for details on submission. Go to "Awards", Section 1, pages 3-4

Autodesk Visualization Award - February 21s
Please read your manual for details on submission. Go to "Awards", Section 6, pages 17-24

Woodie Flowers Essays - February 28th
Please read your manual for details on submission. Go to "Awards", Section 4, pages 9-10

Autodesk Inventor Awards - March 10th
Please read your manual for details on submission. Go to "Awards" Section 5, pages 11-16

Midwest Conference Services (MCS) and request for credit card number
If you have received a request from MCS to provide a credit card number, please note they will only use this number in the event there is an overage (weight) with your robot crate or you have an additional crate to be handled.

February 18, 2003	TEAM UPDATE	# 16

PLEASE DISTRIBUTE THIS TO OTHER TEAM MEMBERS!

REMINDER:
ROBOT SHIP DATE THURSDAY, 5:00 PM EST

NOTE: Team updates will continue after the Thursday, 2/20, 5:00 PM EST robot ship date.

FIRST will provide rules updates and other important information to teams via the FIRST web site at:

http://www.usfirst.org/robotics/2003/docs.htm

Please check the team updates portion of the web site on a regular basis to insure that your team does not miss critical information about the 2003 FIRST Robotics Competition. FIRST recommends assigning at least one team member the duty of keeping up to date on all team updates. This person or group should be responsible for distributing information contained in team updates to the appropriate team members.

QUESTIONS?

MESSAGE BOARD
In order to post questions on our message board at:

http://jive.ilearning.com/index.jsp

- **You must reference the particular section of the manual you are questioning or your question will not be answered. This will help us give you the most accurate answer possible.**
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February 18, 2003	TEAM UPDATE	# 16

AUTODESK, INC.
For all inquiries, please e-mail:

first.entries@autodesk.com

THE GAME

"Scoring made easy" has been delayed until Thursday's Team Update #17.

THE ROBOT

2003 ROBOT INSPECTION CHECKLIST
The 2003 Robot Inspection Checklist will be available on the FIRST website Thursday night, 2/20/2003.

PAGE 16, SECTION 3.3.3
FIRST has received a lot of questions regarding the use of laptop computers, PDA's, etc. Section 3.3.3 clearly allows the use of these devices connected to the dashboard port. Please read this section so that their use is clear.

PAGES 22 +23, RULE C18 + C29 AND TEAM UPDATE #6
In Team Update #6, FIRST allowed teams to connect their custom circuit(s) to the programming port on the Robot Controller. Unrelated to this, there have been reports of some static electricity discharges on the ramp / field. TEAMS SHOULD BE CAUTIONED THAT PIN 4 OF THE PROGRAMMING PORT IS RESET. Teams that connect their custom circuit(s) to the programming port have the "potential" to initiate "reset" by a static discharge, which may result in unknown actions by your robot.

KIT OF PARTS

MISSING OR BROKEN
For any missing parts or broken parts, please contact us at:

frcparts@usfirst.org

February 18, 2003	TEAM UPDATE	# 16

FIELD / CORRECTIONS

There are none for this update.

AUTODESK

There are none for this update.

ADMINISTRATIVE / MATERIAL HANDLING / SHIPPING

There are none for this update.

February 20, 2003	TEAM UPDATE	# 17

PLEASE DISTRIBUTE THIS TO OTHER TEAM MEMBERS!

Congratulations to our teams for "surviving" the 6-week build period!
All of us at FIRST are looking forward to seeing you at the competitions!

Team updates will continue after the Thursday, 2/20 robot ship date.

FIRST will provide rules updates and other important information to teams via the FIRST web site at:

http://www.usfirst.org/robotics/2003/docs.htm

Please check the team updates portion of the web site on a regular basis to insure that your team does not miss critical information about the 2003 FIRST Robotics Competition. FIRST recommends assigning at least one team member the duty of keeping up to date on all team updates. This person or group should be responsible for distributing information contained in team updates to the appropriate team members.

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AUTODESK, INC.
For all inquiries, please e-mail:

first.entries@autodesk.com

February 20, 2003	TEAM UPDATE	# 17

THE GAME

Scoring made easy is in the works. Look for it on Tuesday in a Team Update.

THE ROBOT

2003 ROBOT INSPECTION CHECKLIST
The Robot Inspection Checklist is now available on the FIRST website.

2003 ROBOT INSPECTION PROCESS
Look for it next week in a Team Update.

RULES FOR FABRICATION AFTER SHIPPING YOUR ROBOT
Look for it next week in a Team Update.

PAGE 16, SECTION 3.3.3
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KIT OF PARTS

There are none for this update.

FIELD / CORRECTIONS

There are none for this update.

AUTODESK

There are none for this update.

February 20, 2003	TEAM UPDATE	# 17

ADMINISTRATIVE / MATERIAL HANDLING / SHIPPING

There are none for this update.

February 25, 2003	TEAM UPDATE	# 18

PLEASE DISTRIBUTE THIS TO OTHER TEAM MEMBERS!

FIRST will provide rules updates and other important information to teams via the FIRST web site at:

http://www.usfirst.org/robotics/2003/docs.htm

Please check the team updates portion of the web site on a regular basis to insure that your team does not miss critical information about the 2003 FIRST Robotics Competition. FIRST recommends assigning at least one team member the duty of keeping up to date on all team updates. This person or group should be responsible for distributing information contained in team updates to the appropriate team members.

QUESTIONS?

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AUTODESK, INC.

For all inquiries, please e-mail:

first.entries@autodesk.com

February 25, 2003	TEAM UPDATE	# 18

THE GAME

PAGE 8, RULE GM16

Re-emphasizing the rule:

The human player is an integral part of Stack Attack. GM16 is clear that there will be a human player and he or she will play by placing his/her 4 containers in a legal position in their scoring zone.

PAGE 13, ADD RULE V6

Add V6 as follows:

In the Qualification Matches, any violation of GM13, GM15, GM17 or GM19 or failure to enter and exit the field through their gate will result in **2 Minor Penalties** being assessed against the violating team for that match. In the Elimination Rounds, any violation of GM13, GM15, GM17 or GM19 or failure to enter and exit the field through their gate will result in **2 Minor Penalties** being assessed against the violating team for that match.

PAGE 13, ADD RULE V7

Add V7 as follows:

In the Qualification Matches, any team whose human player containers are not bottom side down and/or in their own scoring zone will be given **2 Minor Penalties** for that match. In the Elimination Rounds, any alliance whose human player containers are not bottom side down and/or in their own scoring zone will be given **2 Minor Penalties** for that match.

PAGE 14, ADD RULE DQ11

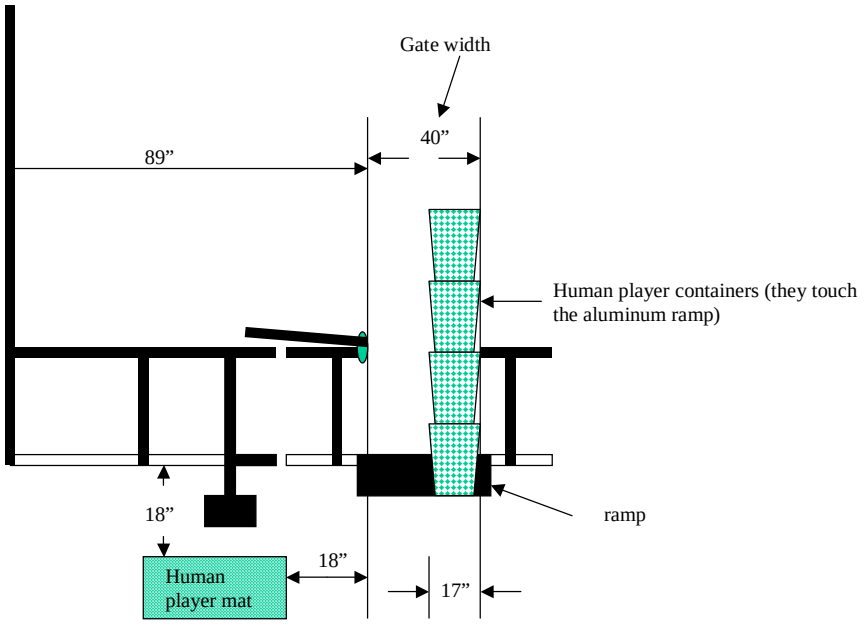
Add DQ11 as follows:

In the Qualification Matches, if a team, for whatever the reason, does not provide a human player, the team is DQ'd for that match; in the Elimination Rounds, the alliance is DQ'd for that match.

February 25, 2003	TEAM UPDATE	# 18

HUMAN PLAYER AND HUMAN PLAYER MAT PLACEMENT

2003 – Human Player and Mat Placement



THE ROBOT

2003 ROBOT INSPECTION PROCESS
Look for it Wednesday night in Team Update #19.

RULES FOR FABRICATION AFTER SHIPPING YOUR ROBOT
Look for it in a Thursday’s Team Update #20.

KIT OF PARTS

There are none for this update.

FIELD / CORRECTIONS

There are none for this update.

February 25, 2003	TEAM UPDATE	# 18

AUTODESK

There are none for this update.

ADMINISTRATIVE / MATERIAL HANDLING / SHIPPING

THIS WAS SENT AS AN E-MAIL BLAST TO ALL TEAMS ON FRIDAY, 2/21/2003 AND IS REPEATED HERE AS A COURTESY

Has your team ever wanted to tell FIRST how to create a cool Robot Game? Here is your team's chance to influence the next FIRST Robotics Competition Game.

Requirements

- This is an **optional** exercise for all FIRST teams.
- Each FIRST team may submit **only one** game design proposal.
- A maximum of **2 pages**, letter size, including drawings
- In **one file**, either Microsoft Word 2000 or earlier, PDF, jpg or gif.
- No later than 5:00 P.M. (EST) on Friday, **March 14**, 2003

Use of Your Ideas

The ideas in your proposal will be used as seeds for the game design process. Proposals are reviewed by Regional Game Design Teams who may use part, all, or none of any proposal submitted. Use your craziest ideas, and make your ideas stand out!

What to Include

- Name and contact information on the first page of the submission
- A description of the game
- A description of the playing field layout and elements
- Scale drawings or images of playing field elements and field layout.
- A key technology your team would like to highlight (e.g. Banner sensors)
- A clear role for the human player
- How the game is scored
- Any specific robot or game rules

Submit

Email to GameDesign@usfirst.org with your **Team Number as the Subject**. Or mail **3 copies** to:

FIRST
ATTN: Cindy Randall
200 Bedford St.

Manchester, NH 03101

no later than **5:00 P.M. (EST) on Friday, March 14, 2003**. Please be sure to include name and contact information on the first page of the submission.

Questions

For more information please email Cindy Randall at Crandall@usfirst.org.

February 26, 2003	TEAM UPDATE	# 19

PLEASE DISTRIBUTE THIS TO OTHER TEAM MEMBERS!

FIRST will provide rules updates and other important information to teams via the FIRST web site at:

http://www.usfirst.org/robotics/2003/docs.htm

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AUTODESK, INC.

For all inquiries, please e-mail:

first.entries@autodesk.com

February 26, 2003	TEAM UPDATE	# 19

THE GAME

There are none for this update.

THE ROBOT

2003 ROBOT INSPECTION PROCESS PILOT

FIRST is piloting a new process for the 2003 season whereby we will utilize team people to assist with robot inspections. FIRST feels this has the potential to improve the speed and quality of robot inspections but will only work if we all practice "gracious professionalism." Everyone involved must treat one another with respect.

The time commitment is late Wednesday afternoon and evening (about 8:00 PM being the latest), all day Thursday as this is the big inspection day (from 9:00 AM until 6:00 PM), and occasionally Friday morning from 8:00 AM to 9:00 AM for the 1 or 2 that didn't pass on Thursday. Ideally, we will inspect 3-4 robots (rookie, mid-level experience, and veteran) Wednesday evening / Thursday morning as part of the inspector training. The robots chosen should represent the range of electrical, mechanical, and pneumatics.

For those team members that are interested in assisting with robot inspections, please read the procedure below and, in particular, item 1 to see if you qualify as an inspector. If you qualify and could help us, we would like to know, in advance, for which events you are available.

Please use the FIRST website to sign up as a **Robot Inspector** by following the link below:

http://www.usfirst.org/volunteer

INSPECTION PROCEDURE

1. All robot inspections will be done by a four-person team consisting of 2 students with at least two years of competition experience and 2 adult mentors with at least two years of competition experience (you must have competed in at least the **2001 and 2002** seasons). Smaller inspection teams may be necessary depending on the number of people that volunteer to inspect. In no case will teams be comprised of just students.
2. Members of each inspection team must come from different FRC teams and may not inspect their own team.
3. Any team failing inspection may challenge the decision of the inspector if they disagree with the interpretation of the rules. A second team will be sent to

review the decision.

4. If the second set of inspectors cannot reach consensus, the final decision will be made by the FIRST engineering staff member on site. This person should review the reason for disagreement with both inspection teams and the on site IFI representative.
5. Each team must supply an itemized list of purchase components at the time of event registration that will support the following:
   - Additional robot components $3,500 max / $400 individual component max and includes the electronics in the next bullet;
   - Additional electronics $200 max / $100 individual component.
6. The final decision will rest with Hut Snow and the FIRST advisors via phone call if necessary.

INSPECTION CHALLENGE PROCESS

FIRST realizes that some robots pass inspection when, in fact, maybe they shouldn't have. If a robot passes inspection BUT another team member/team feels the robot is not legal for some reason, FIRST will pilot a new process this year.

A team that is questioning a robot's inspection must note the team number and violation on an index card available at Pit Admin and deposit the card in a box there. The card can be anonymous. The cards will be reviewed periodically during inspection day and resolved.

KIT OF PARTS

There are none for this update.

FIELD / CORRECTIONS

There are none for this update.

AUTODESK

There are none for this update.

ADMINISTRATIVE / MATERIAL HANDLING / SHIPPING

There are none for this update.

February 26, 2003	TEAM UPDATE	# 19

March 3, 2003	TEAM UPDATE	# 20

PLEASE DISTRIBUTE THIS TO OTHER TEAM MEMBERS!

THIS IS THE LAST TEAM UPDATE.
SEE YOU AT THE EVENTS! GO TEAMS!

FIRST will provide rules updates and other important information to teams via the FIRST web site at:

http://www.usfirst.org/robotics/2003/docs.htm

Please check the team updates portion of the web site on a regular basis to insure that your team does not miss critical information about the 2003 FIRST Robotics Competition. FIRST recommends assigning at least one team member the duty of keeping up to date on all team updates. This person or group should be responsible for distributing information contained in team updates to the appropriate team members.

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AUTODESK, INC.
For all inquiries, please e-mail:

first.entries@autodesk.com

March 3, 2003	TEAM UPDATE	# 20

THE GAME

PAGE 9, RULE GM31

Teams should take careful note on this:

FIRST will enforce GM31 thoroughly. Assemblies/appendages, which straddle the midfield barrier, will be thoroughly reviewed and likely disallowed as they clearly are intended to react with the field. Robot devices which are deployed or in a fixed position in order to avoid being pushed under the midfield barrier are designed to react with the field and will likely be disallowed.

Devices, which "lock" onto the platform, ramps, carpet, etc., and are subsequently pushed by another robot so as to cause/potentially cause field damage, must then be disengaged. The potential for damage rests with the deployer of mechanisms.

SCORING EXAMPLES

Referee Scoring Process and Examples:

This example is for the RED alliance. The referees will:

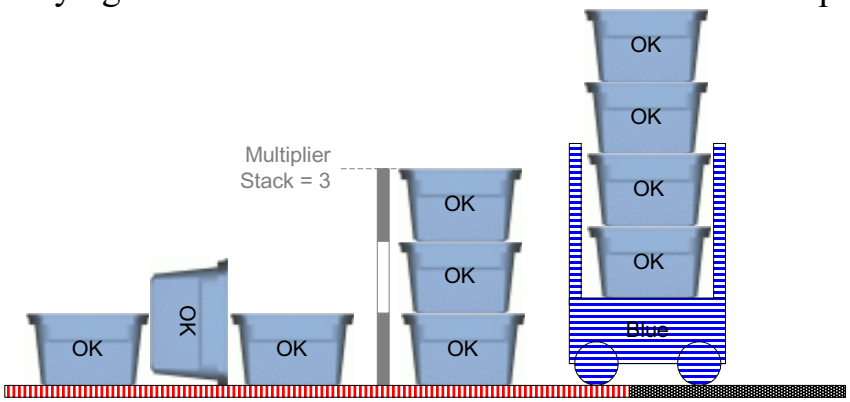
1. Find the multiplier stack height:
   - Go to the tallest stack that is touching the red carpet.
   - Check if any container in that stack is touching a robot for the red alliance, if it is, go to the next tallest stack, etc.
   - If stacked normally, simply count the containers in this stack.
   - If the height of this stack is not immediately clear, due to a pyramid shape, sideways containers, etc., use the measuring stick to find the height of the stack in SHUs.
2. Count the containers:
   - Count the containers in the red zone, including in the multiplier stack and including those touching or on a blue robot in the red zone.
   - Do NOT count containers touching a red robot.
   - Do NOT count any of the containers in a stack if the stack is touching a red robot.
3. Count red robots on the center platform:
   - Count red robots touching only the white HDPE (and one sidewall is OK).
   - If the red robot is touching another red robot that doesn't count as on the center platform, don't count either red robot. (A red robot touching a red robot that does count, or touching any blue robots is OK.)

- If the red robot is completely on top of any robot that counts as on the center platform, it counts too.

The scoring system then calculates the red score as:
((containers – multiplier stack height) x multiplier stack height)
If the result is less than 0, use 0
Add (robots x 25)

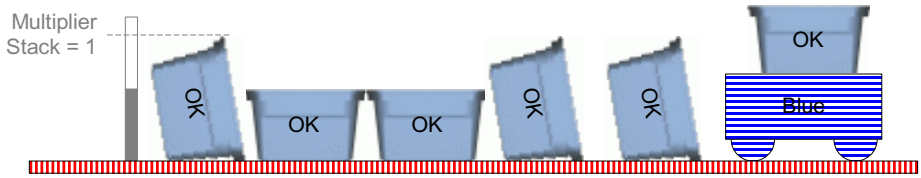
Examples of unusual scoring zone situations:

Example 1: There are 10 containers in the red scoring zone, one in a stack of 4, one in a stack of 3, and 3 scattered about. A blue robot comes over, lifts up the stack of 4 and starts to drive away when time runs out. After movement stops, one wheel of the blue robot is still on the red carpet, and this blue robot is carrying the stack of 4 in the air. No robots are on the platform.



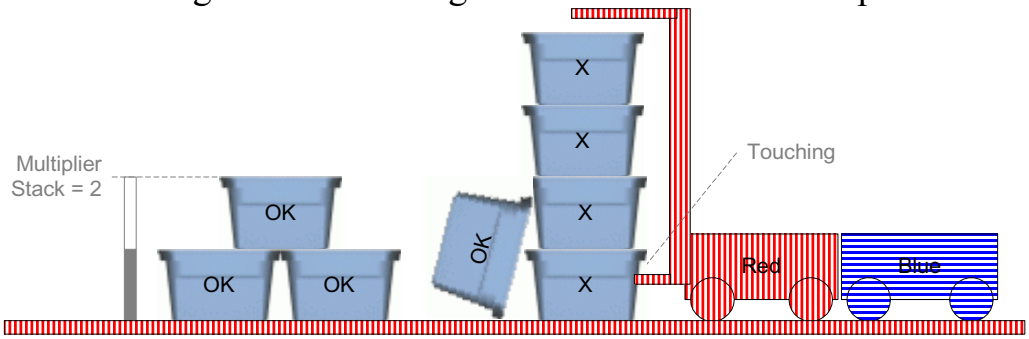
Result: The referees note that the stack of 4 does not have contact with the red carpet, and the stack of 3 becomes the multiplier stack. For container count, the blue robot is in the red scoring zone, and the stack of four is supported by the blue robot, so the container count is 10 total. The score for red is
((10 – 3) x 3) + (0 x 25) = 21

Example 2: There are 7 containers in the red scoring zone, one in a stack of 4 and 3 scattered about. A blue robot plows through the stack of 4: 1 of the containers lands on the blue robot, 1 is thrown out of the arena, and 2 land on the carpet. The match ends with the blue robot still on the red carpet, 1 container on the blue robot, and 5 containers on the red carpet. No robots are on the platform.



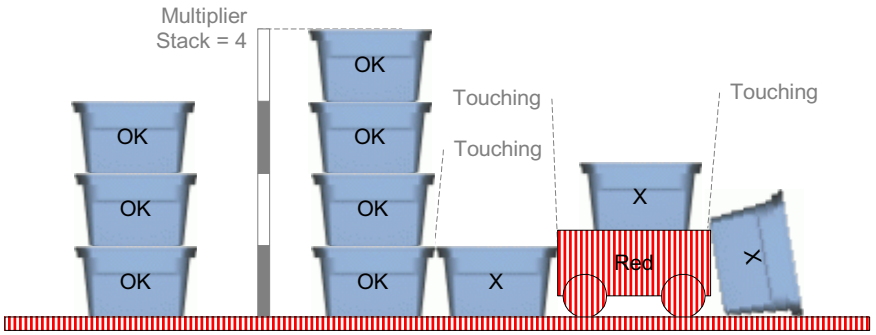
Result: The referees note that the stack of 1 on the blue robot does not have contact with the red carpet, and a single container on the carpet becomes a multiplier stack of 1. For container count, the blue robot is in the red scoring zone and the one container on it counts, so the container count is 6 total. The score for red is ((6 – 1) x 1) + (0 x 25) = 5

Example 3: There are 8 containers in the red scoring zone, one stack of 3 containers in a pyramid, and the remaining 5 scattered about. A red robot begins picking up scattered containers and stacking them. After stacking 4 containers, a blue robot heads towards the red robot at high speed. Time runs out. The red robot's spring loaded stacking mechanism springs away from the stack of 4, so the red robot is no longer touching the stack. The blue robot continues to glide, bumping the red robot slightly so that the red robot is touching the stack of 4 again. No robots are on the platform.



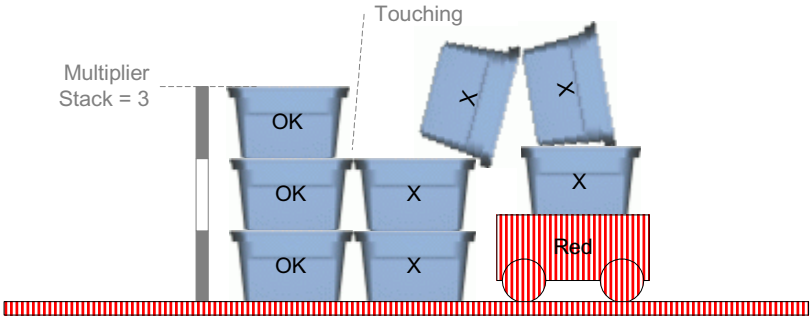
Result: The referees note that the stack of 4 is touching the red robot, and the pyramid becomes the multiplier stack. The referees can clearly see the height of the pyramid is 2 SHU. The stack of 4 is touching the red robot, so none of those containers count. The 3 in the pyramid, and the remaining 1 count, making a total of 4. The score for red is ((4 – 2) x 2) + (0 x 25) = 4

Example 4: There are 10 containers in the red scoring zone, one stack of 3 containers, one stack of 4 containers, one on the red robot, and the remaining 2 scattered about. A red robot ends the match with one on top, touching another container, and one container leaning against it. The container touching the red robot is also touching the stack of 4. No robots are on the platform.



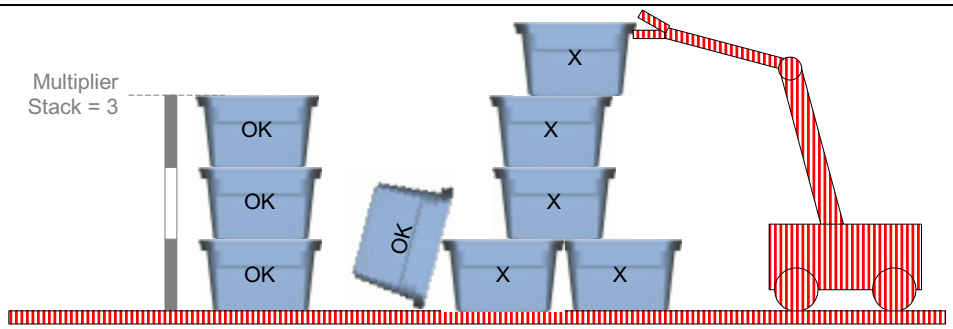
Result: The referees note that the stack of 4 is not directly touching the red robot, and this is the multiplier stack. The container on the red robot and the two touching the red robot do not count, the remaining 7 do. The score for red is ((7 – 4) x 4) + (0 x 25) = 12

Example 5: There are 8 containers in the red scoring zone, in a stack of 3 and a stack of 5 touching each other. At the last second a red robot hits the stack of 5, and part of it piles on top of a red robot. The top containers are partially supported by the red robot, and partly by the red carpet. There are no robots on the ramp.



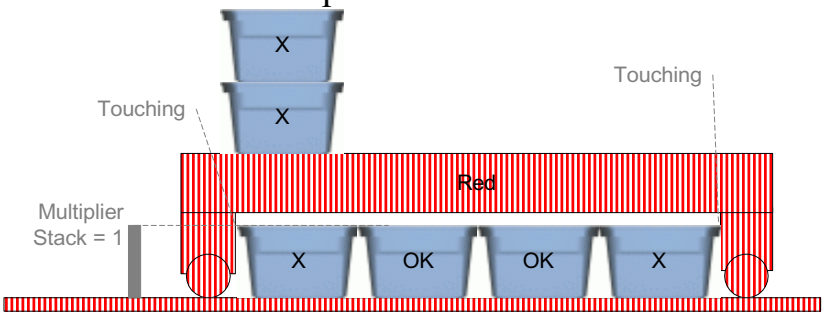
Result: The referees note that the pile is touching the red robot, so this is not the multiplier stack. The stack of 3 is the multiplier stack. All the containers in the pile are in the same stack, and touching the red robot, so none of these containers count. The score for red is ((0 – 3) x 3) + (0 x 25) = 0 (the first part of the scoring equation cannot go below 0)

Example 6: There are 9 containers in the red scoring zone. There is a stack of 3, a pyramid stack of 4 at a height of 3, and 2 loose containers. A red robot stacks one of the loose containers on the stack of 4, but time runs out with the mechanism still touching the container. There are no robots on the ramp.



Result: The referees note that the pile of 5 is touching the red robot, so this is not the multiplier stack. The stack of 3 is the multiplier stack. The stack of 5 is touching the red robot, so no containers in this stack count. The remaining loose container, leaning against the stack of 4 but not supporting the stack of 4 is OK. The score for red is ((4 – 3) x 3) + (0 x 25) = 3 (scores cannot go below 0)

Example 7: There are 6 containers in the red scoring zone. A red robot grabs and holds onto 4 containers on the carpet, and has 2 resting on top of it. There are no robots on the ramp.



Result: The stack of containers on the red robot is not touching the carpet, so the multiplier stack is a multiplier of one. The referees note that the two end boxes being grabbed are touching the red robot, so those do not count, nor does the one on top. The remaining two are being held, but are not touching the red robot but are touching the carpet and so they count. The score for red is ((2 – 1) x 1) + (0 x 25) = 1

THE ROBOT

FANS

You can add muffin fans to your robot to cool your motors to a total of 5 large fans total. They do not have to be connected to a relay and can all be powered from 1 20A. circuit breaker.

MODIFIED – INSPECTOR TRAINING ON THURSDAY MORNING, NOT WEDNESDAY NIGHT

FIRST is piloting a new process for the 2003 season whereby we will utilize team people to assist with robot inspections. FIRST feels this has the potential to improve the speed and quality of robot inspections but will only work if we all practice "gracious professionalism." Everyone involved must treat one another with respect.

The time commitment is all day Thursday as this is the big inspection day (from 9:00 AM until 6:00 PM) and occasionally Friday morning from 8:00 AM to 9:00 AM for the 1 or 2 that didn't pass on Thursday. Ideally, we will inspect 3-4 robots (rookie, mid-level experience, and veteran) Thursday morning as part of the inspector training. The robots chosen should represent the range of electrical, mechanical, and pneumatics.

For those team members that are interested in assisting with robot inspections, please read the procedure below and, in particular, item 1 to see if you qualify as an inspector. If you qualify and could help us, we would like to know, in advance, for which events you are available.

Please use the FIRST website to sign up as a **Robot Inspector** by following the link below:

http://www.usfirst.org/volunteer

INSPECTION PROCEDURE

1. All robot inspections will be done by a four-person team consisting of 2 students with at least two years of competition experience and 2 adult mentors with at least two years of competition experience (you must have competed in at least the **2001 and 2002** seasons). Smaller inspection teams may be necessary depending on the number of people that volunteer to inspect. In no case will teams be comprised of just students.
2. Members of each inspection team must come from different FRC teams and may not inspect their own team.
3. Any team failing inspection may challenge the decision of the inspector if they disagree with the interpretation of the rules. A second team will be sent to review the decision.
4. If the second set of inspectors cannot reach consensus, the final decision will be made by the FIRST engineering staff member on site. This person should review the reason for disagreement with both inspection teams and the on site IFI representative.
5. Each team must supply an itemized list of purchase components at the time of event registration that will support the following:
   - Additional robot components $3,500 max / $400 individual component max and

includes the electronics in the next bullet;
- Additional electronics $200 max / $100 individual component.

6. The final decision will rest with Hut Snow and the FIRST advisors via phone call if necessary.

INSPECTION CHALLENGE PROCESS

FIRST realizes that some robots pass inspection when, in fact, maybe they shouldn't have. If a robot passes inspection BUT another team member/team feels the robot is not legal for some reason, FIRST will pilot a new process this year.

A team that is questioning a robot's inspection must note the team number and violation on an index card available at Pit Admin and deposit the card in a box there. The card can be anonymous. The cards will be reviewed periodically during inspection day and resolved.

KIT OF PARTS

PARTS FROM MMH

Ordering from MMH is now done. Any extra parts are packed and will be available on the road.

PARTS FABRICATION AFTER EVENTS

In order to better allow teams to replace robot components that fail or do not work well at competition events, FIRST will adopt the following:

1. At the competition events, teams can build whatever they want:
   - Spare parts;
   - Replacement parts;
   - Extra parts;

   They must be fabricated on-site utilizing available fabrication resources. We are, however, concerned about the potential for teams to over-utilize the competition machine shop in the fabrication of new parts when the shop should be dedicated to repairing parts required to keep robots running and able to participate. Therefore, a machine shop's top priority will be repairing parts with fabrication as time allows

2. After each event in which a team participates, the team has until midnight Wednesday (local time) immediately following their event to repair and/or fabricate new mechanisms and may bring these parts and mechanisms to any subsequent events. As before, we must rely on the gracious professionalism of teams to adhere to the rules of the FIRST Robotics Competition.

3. Teams are allowed to purchase raw materials (wheels, gears, metal stock, etc.) and bring them to event sites in preparation to fabricate custom parts or mechanisms on-

site at events.

4. Unchanged is the policy that teams may not perform part fabrication or repair of parts off-site when the robot is at an event (i.e., no taking parts back to your hotel), and that teams must ship all robot parts at an event site directly to any subsequent sites.

Example: Team A is attending two regional events. At their first event, their robot breaks a gearbox. Team A must ship their robot and all it's parts directly to the next event site they will be competing at. However, Team A has until midnight Wednesday following the event to fabricate a new gearbox and bring it with them to their next event.

FIELD / CORRECTIONS

There are none for this update.

AUTODESK

There are none for this update.

ADMINISTRATIVE / MATERIAL HANDLING / SHIPPING

There are none for this update.